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(12) **United States Patent**
Newkirk et al.

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(54) **USER MODULE FOR A PATIENT SUPPORT APPARATUS**

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(73) Assignee: **Hill-Rom Services, Inc.**, Batesville, IN (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(65) **Prior Publication Data**

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Related U.S. Application Data

(63) Continuation of application No. 15/798,473, filed on Oct. 31, 2017, now Pat. No. 10,842,695, which is a continuation of application No. 14/452,081, filed on Aug. 5, 2014, now Pat. No. 9,827,157, which is a continuation of application No. 11/672,274, filed on Feb. 7, 2007, now abandoned.

(60) Provisional application No. 60/771,318, filed on Feb. 8, 2006.

(51) **Int. Cl.**

A61G 7/05	(2006.01)
A47C 21/08	(2006.01)

(52) **U.S. Cl.**
CPC ***A61G 7/0524*** (2016.11); ***A61G 7/05*** (2013.01); ***A61G 7/0507*** (2013.01); *A47C 21/08* (2013.01)

(58) **Field of Classification Search**
CPC A61G 7/05; A61G 7/0507; A61G 7/0524; A47C 21/00; A47C 21/08
USPC 5/424, 425, 503.1, 600, 658
See application file for complete search history.

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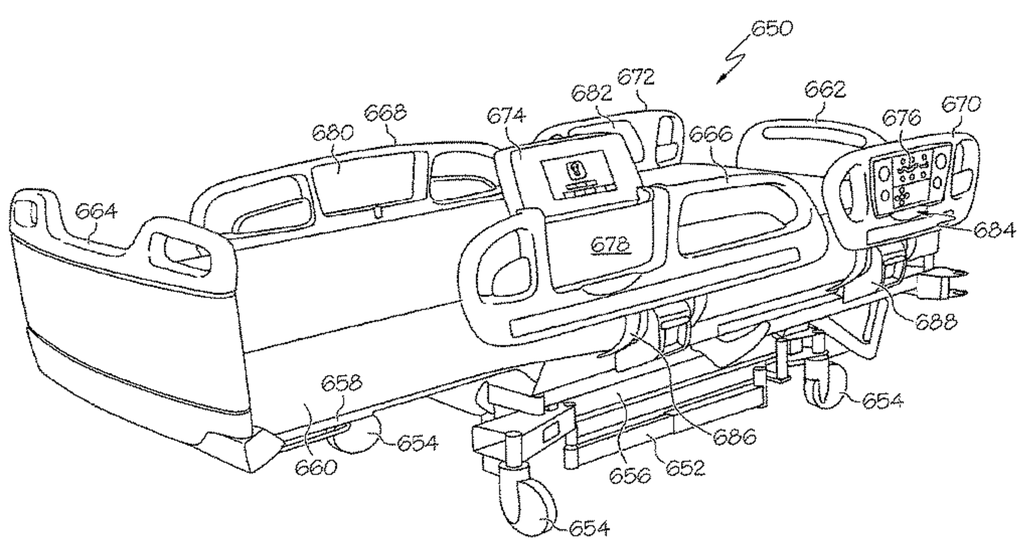
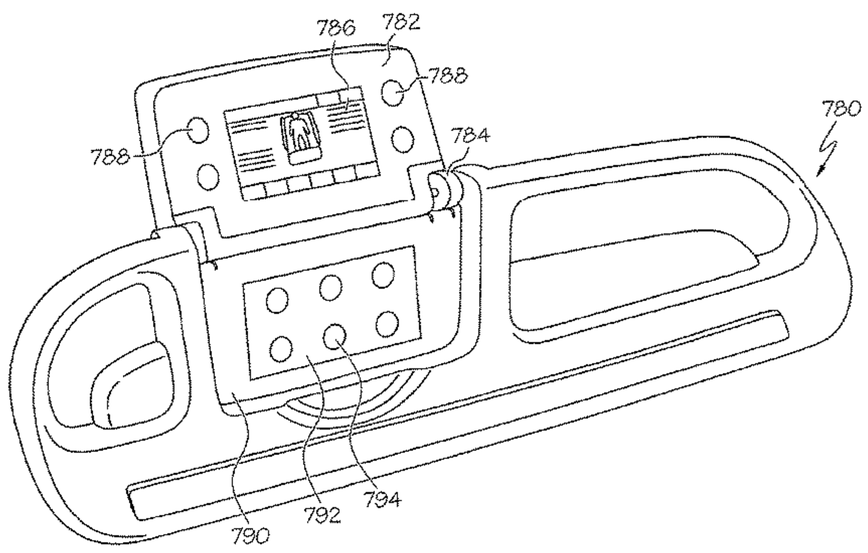
Primary Examiner — Robert G Santos
(74) *Attorney, Agent, or Firm* — Barnes & Thornburg LLP

(57) **ABSTRACT**

A user module for a patient support is provided. The user module is coupled to a patient support barrier, such as a siderail or a footboard.

16 Claims, 36 Drawing Sheets





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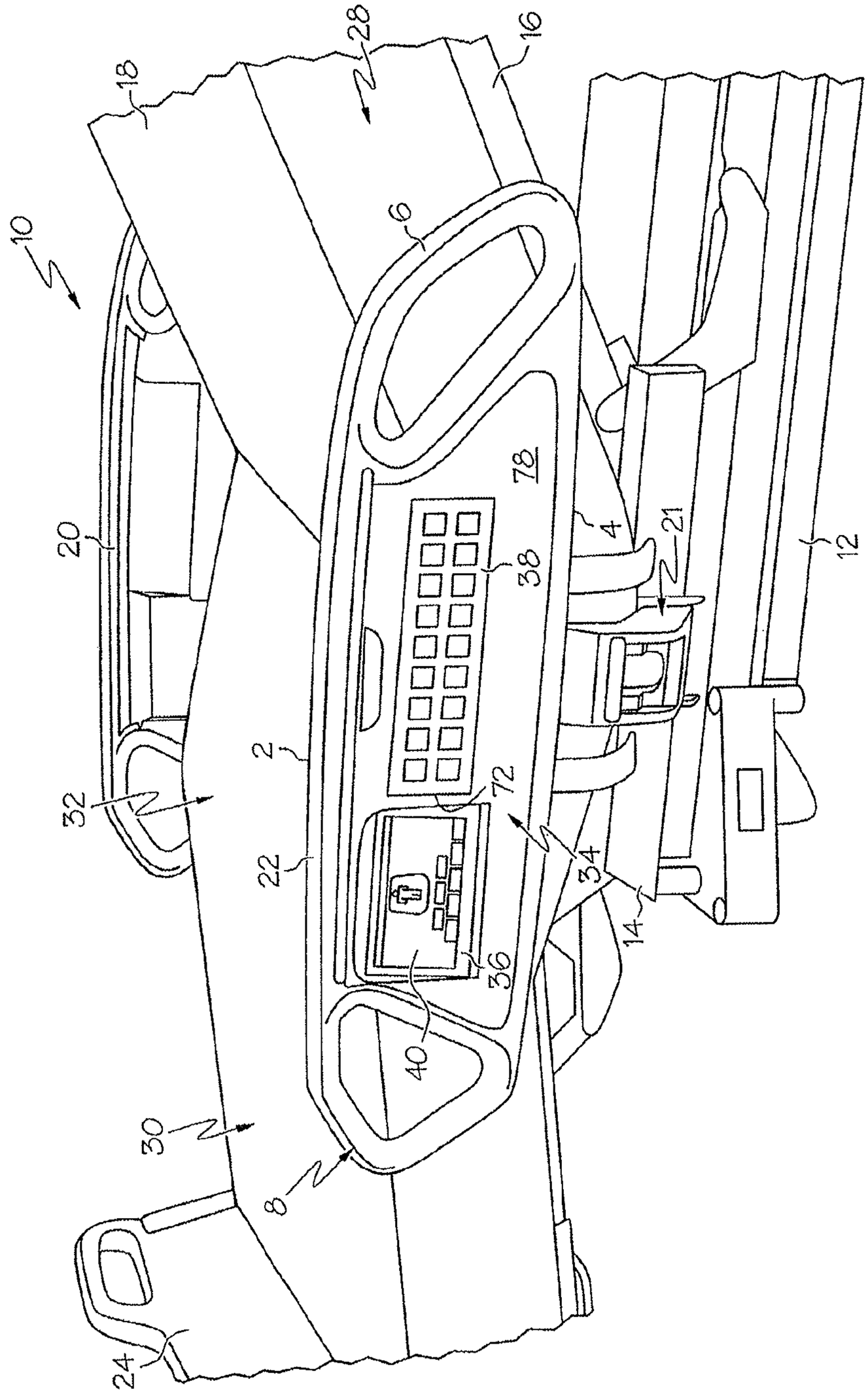


FIG. 1

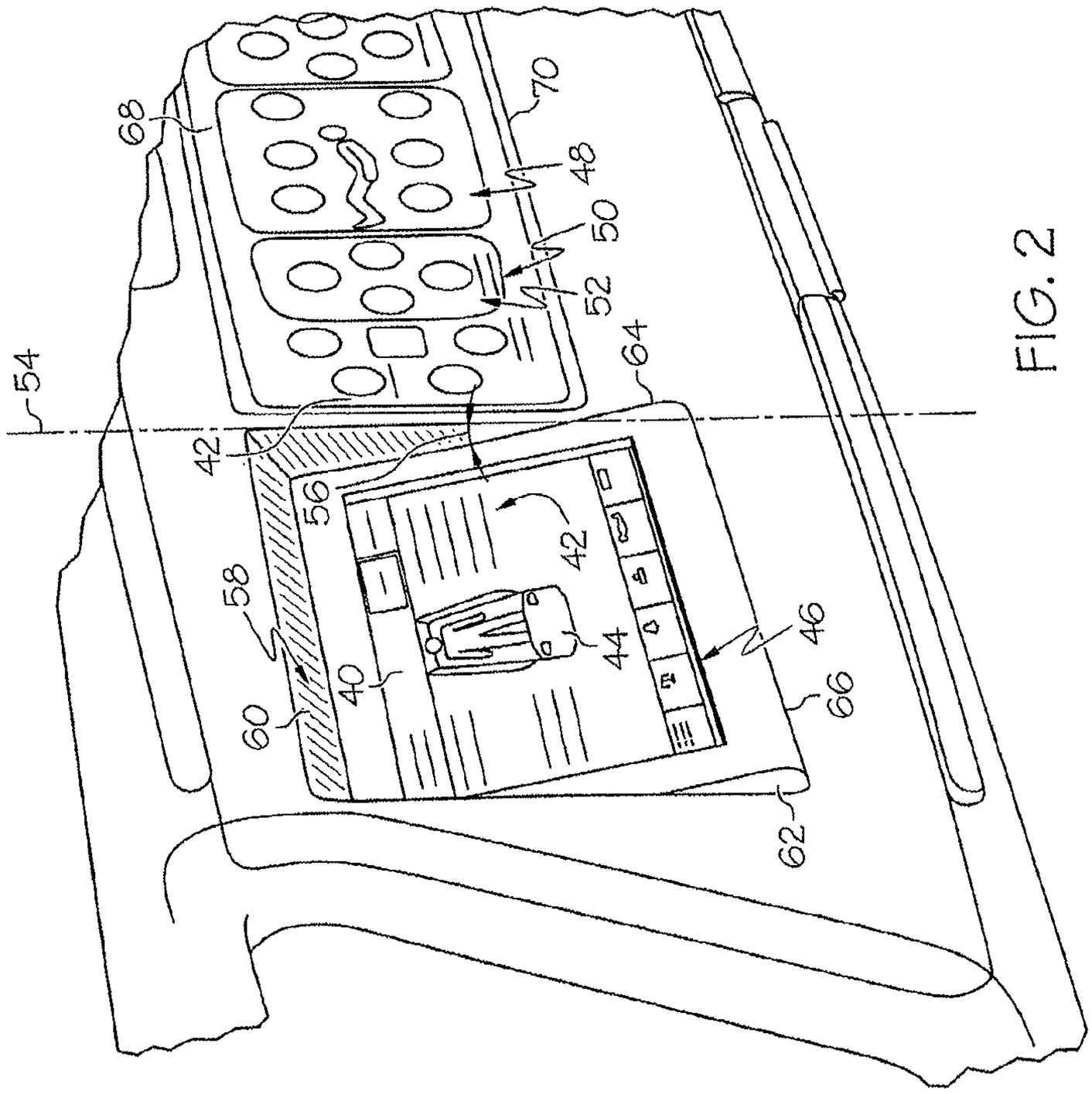
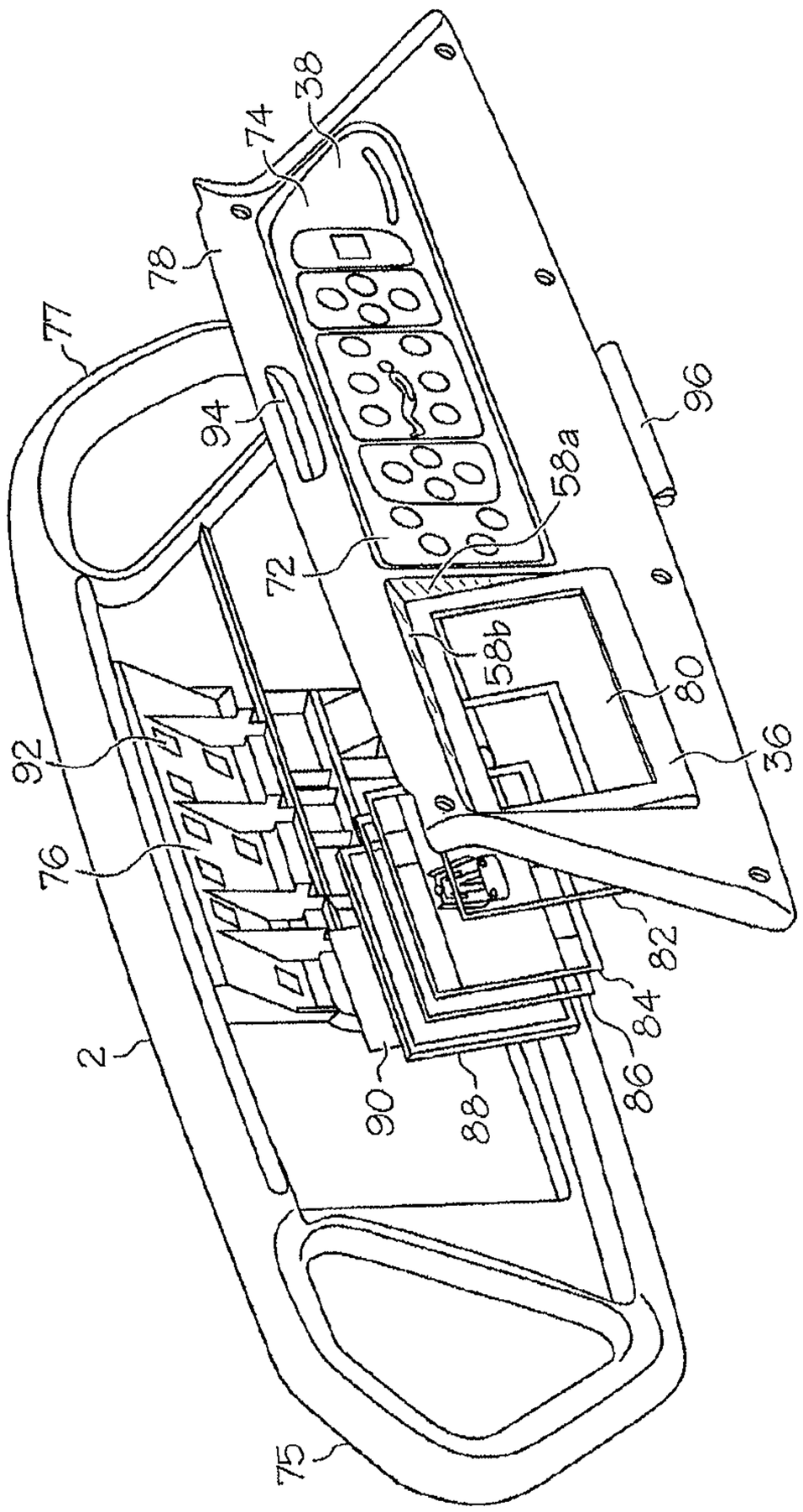


FIG. 2



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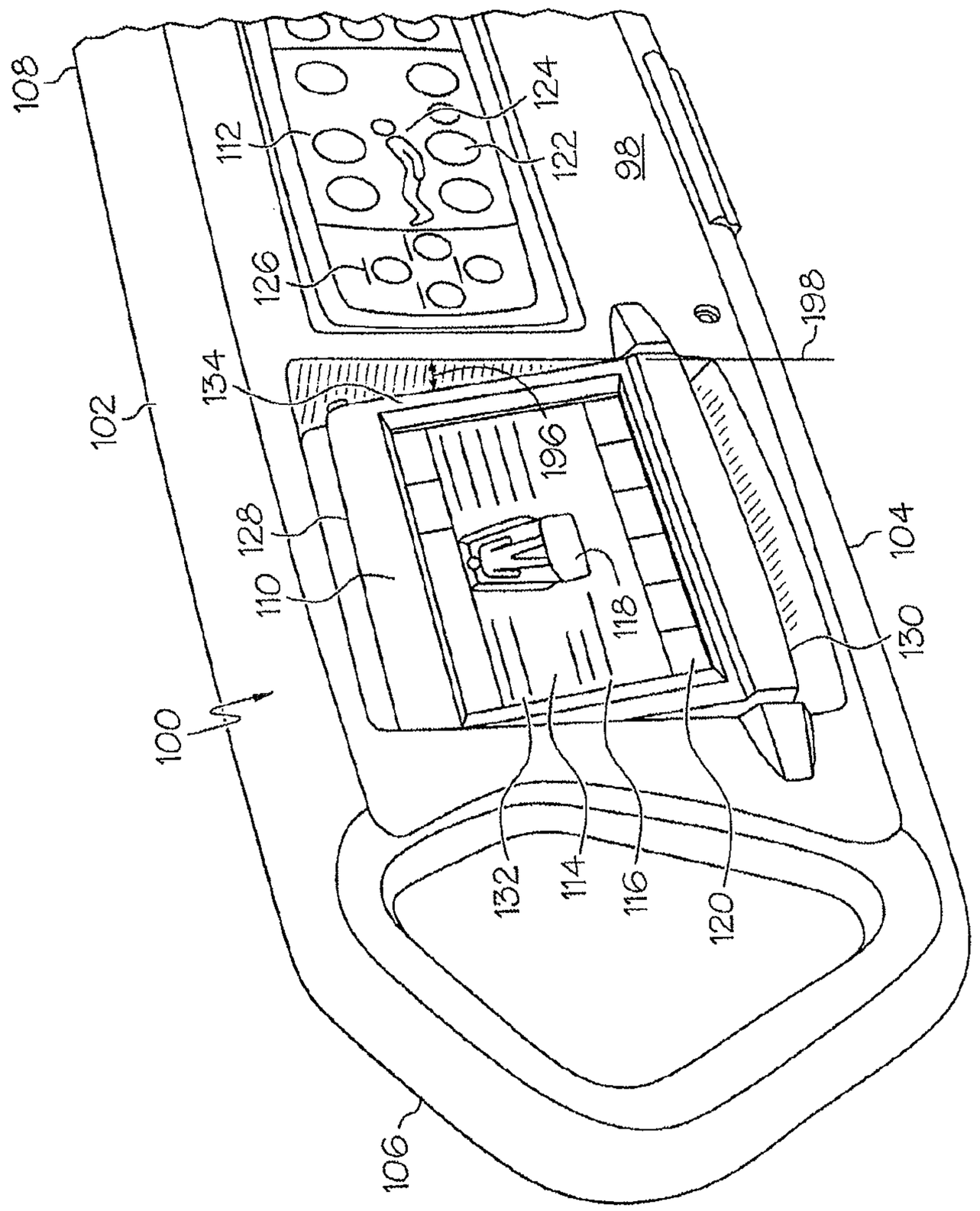
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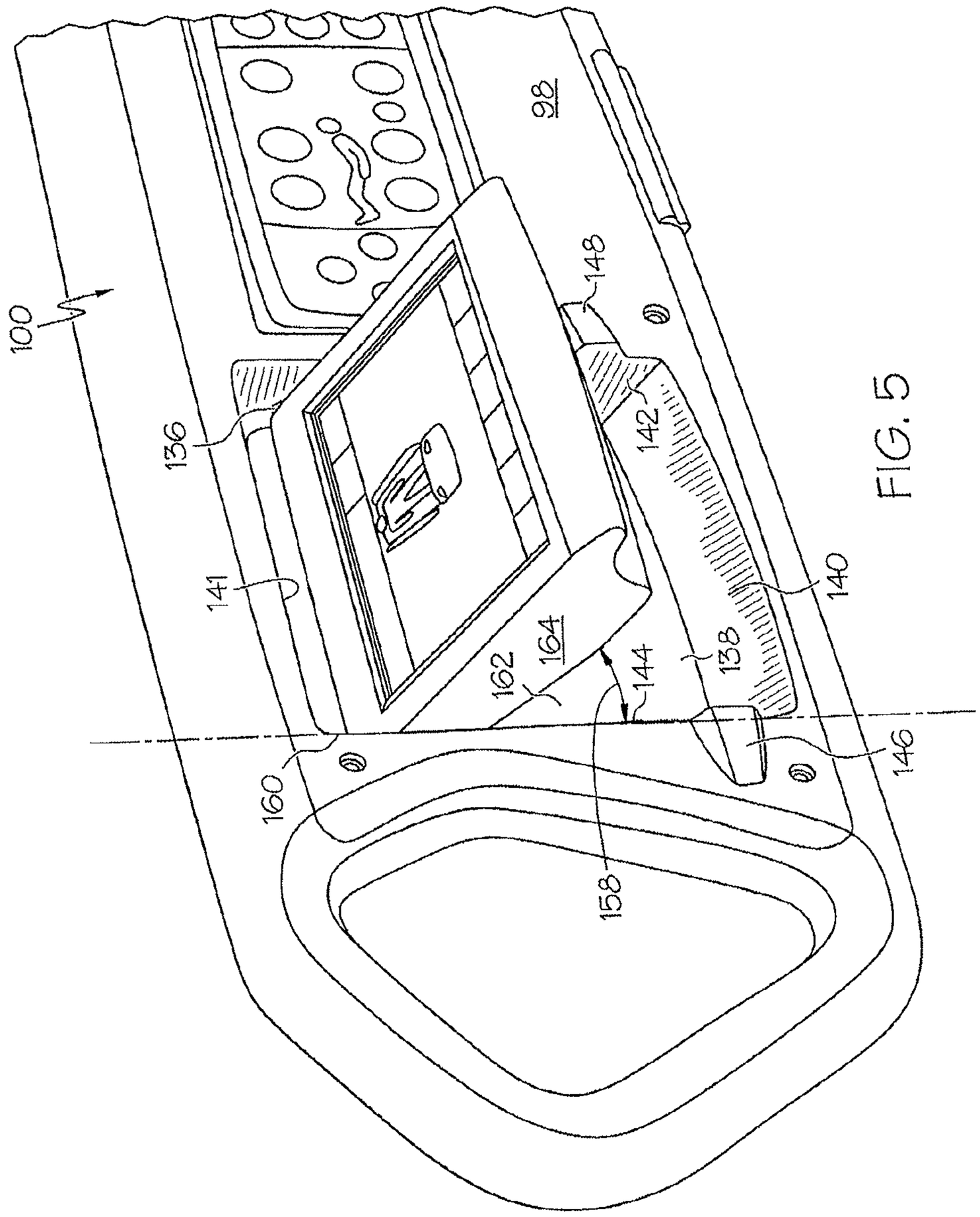

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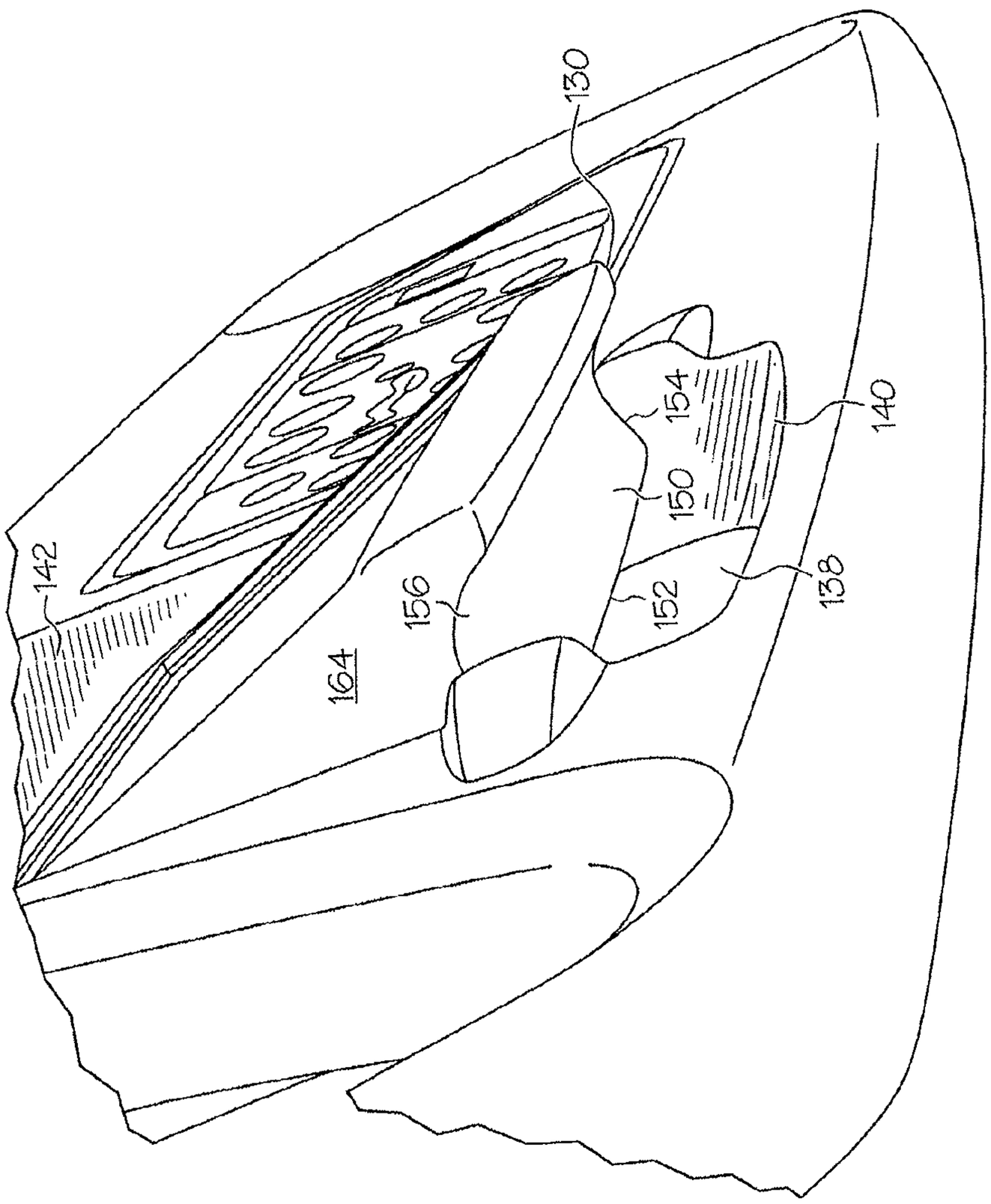

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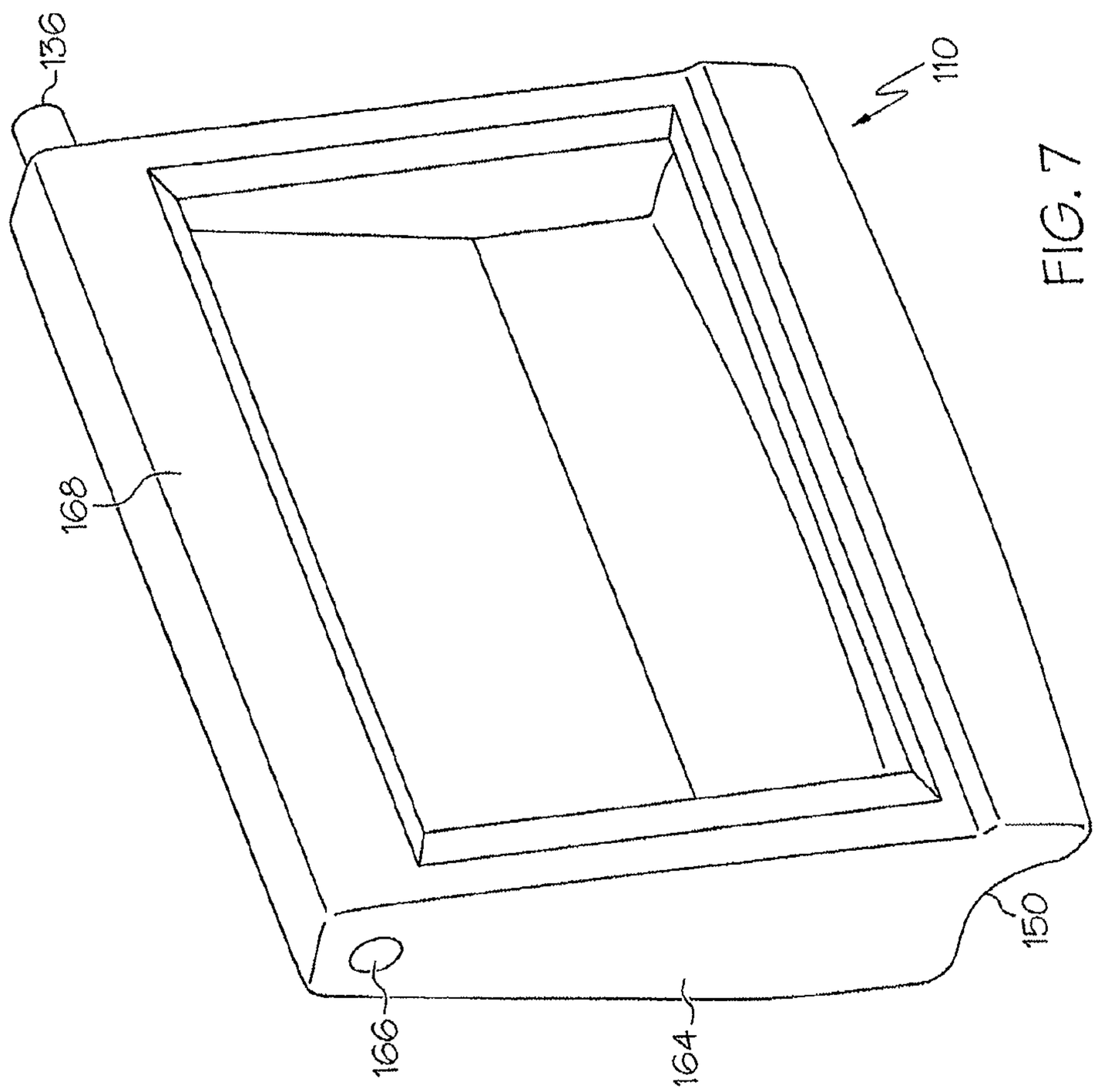

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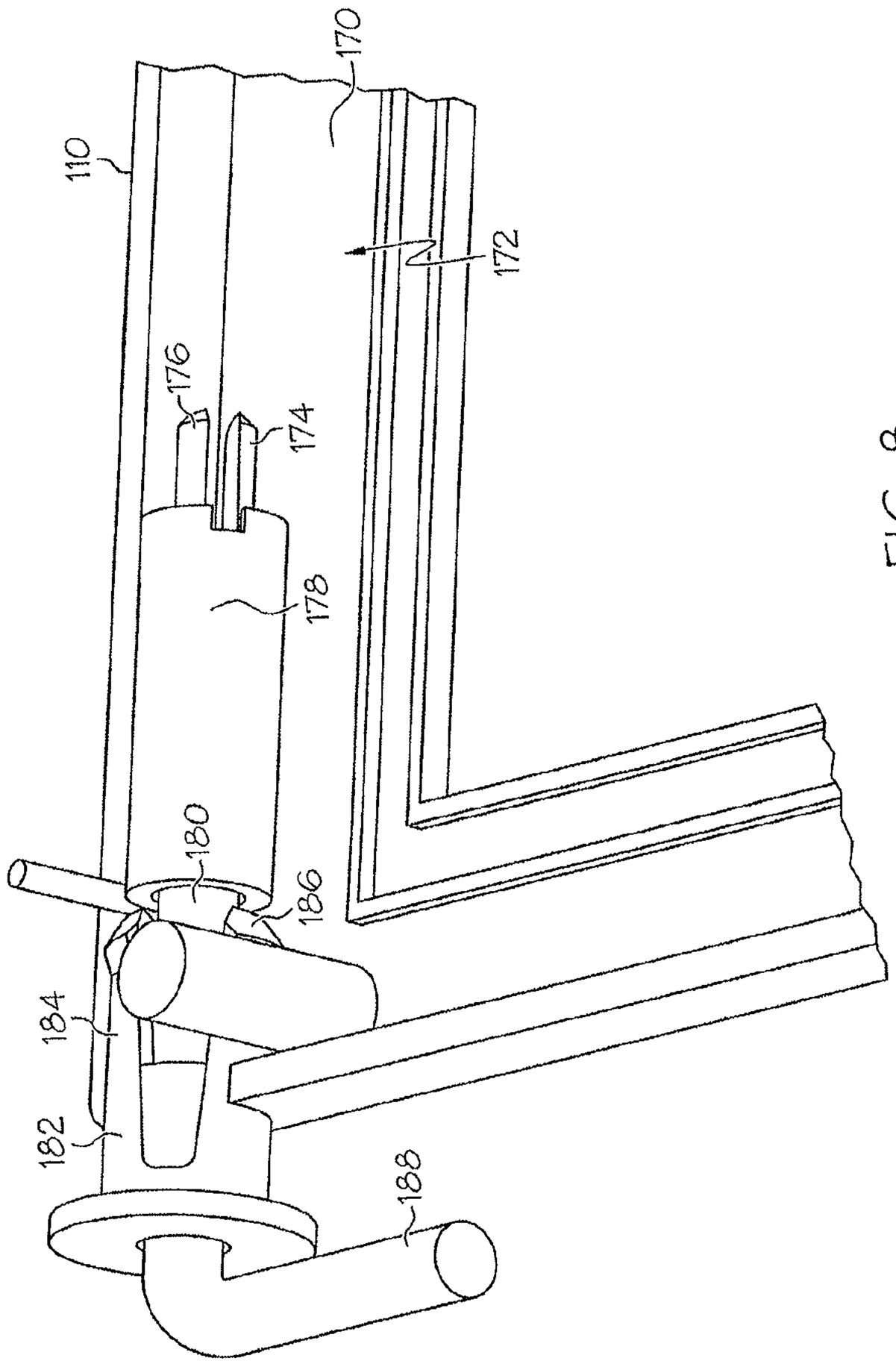

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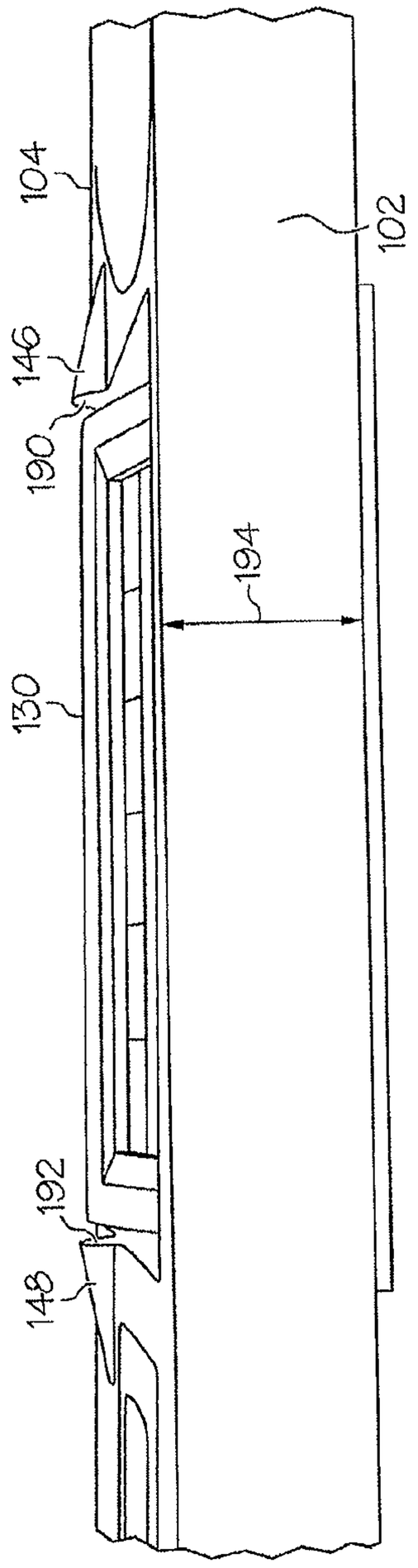

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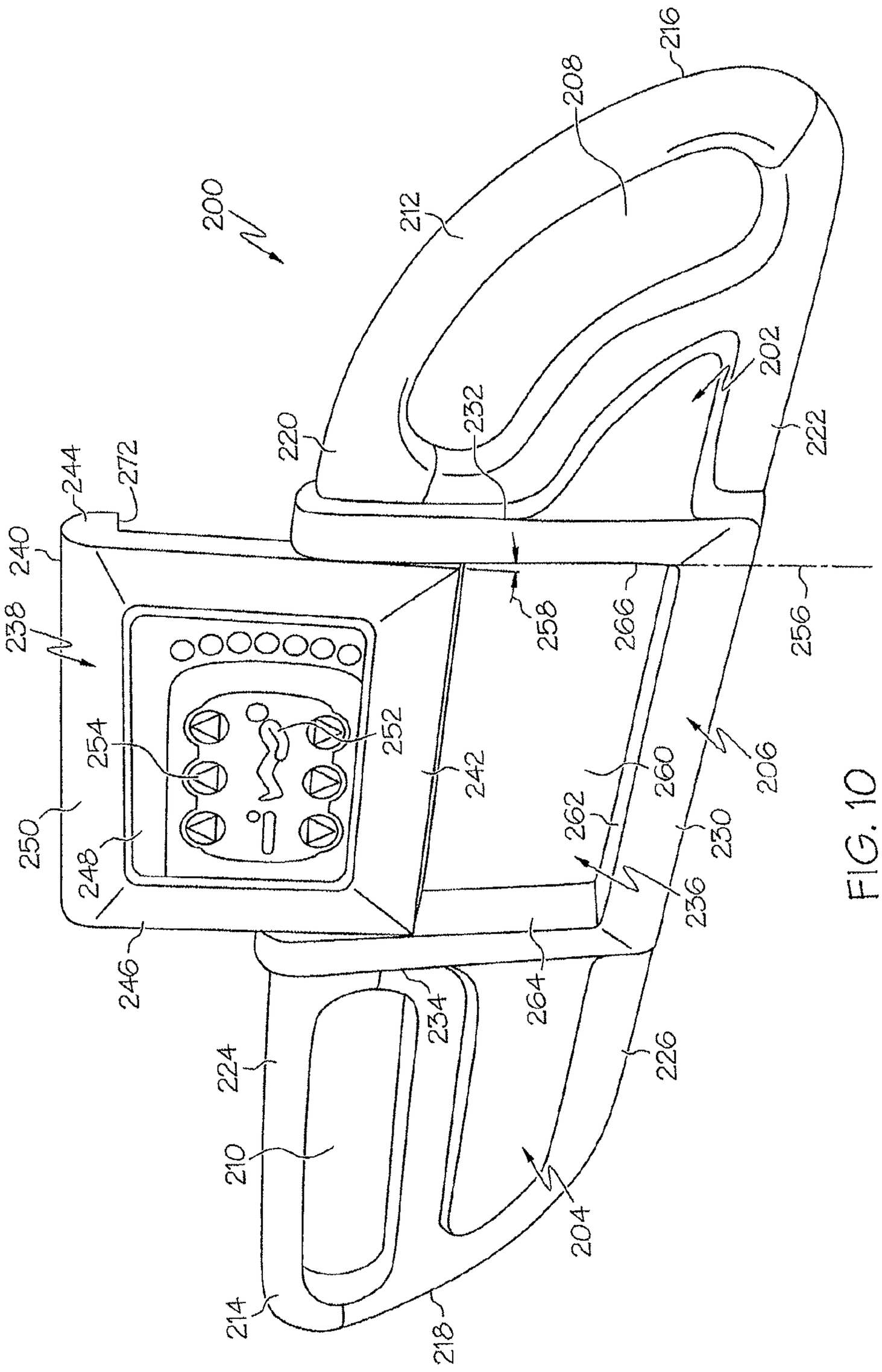
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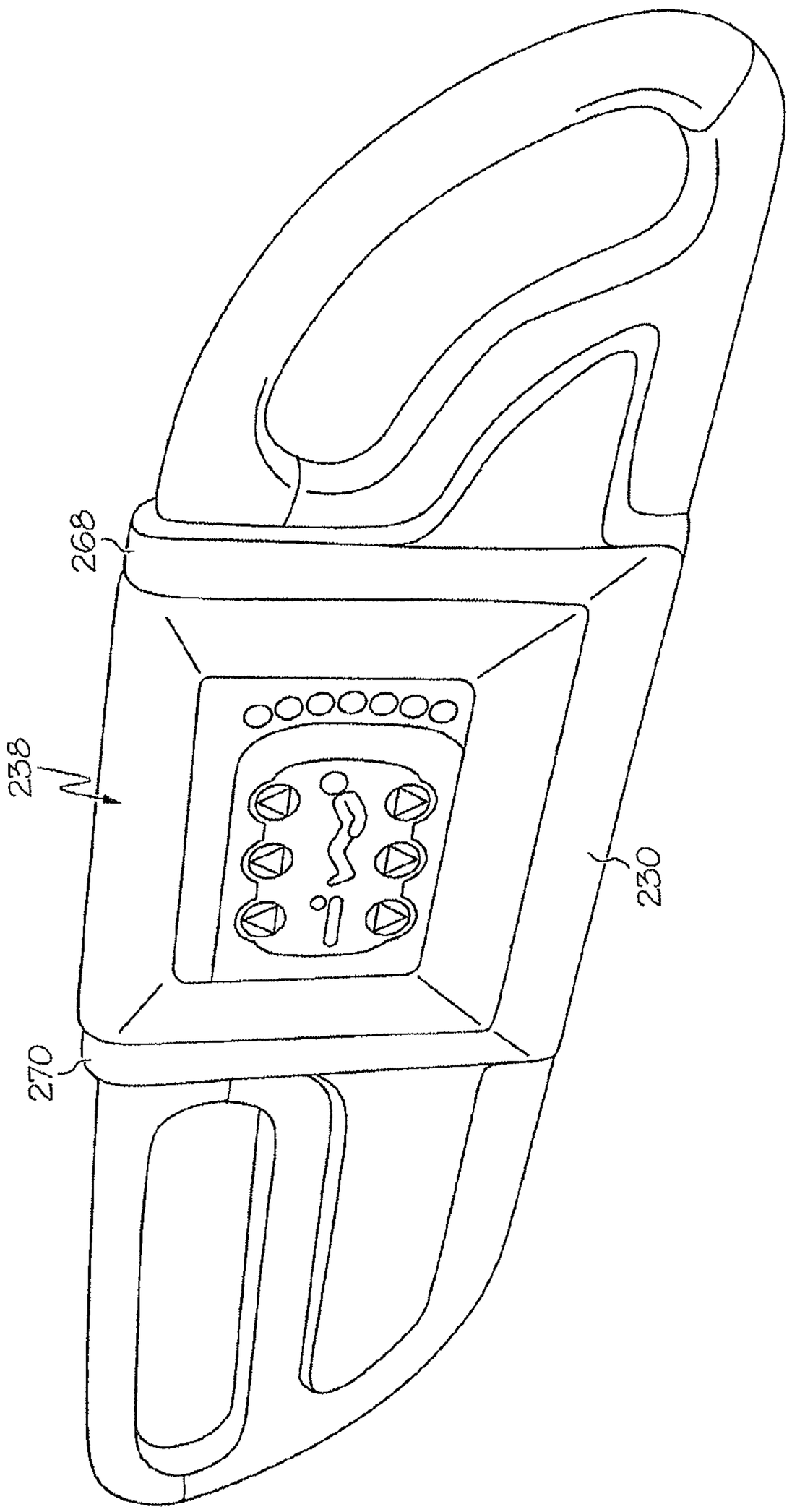
FIG. 10



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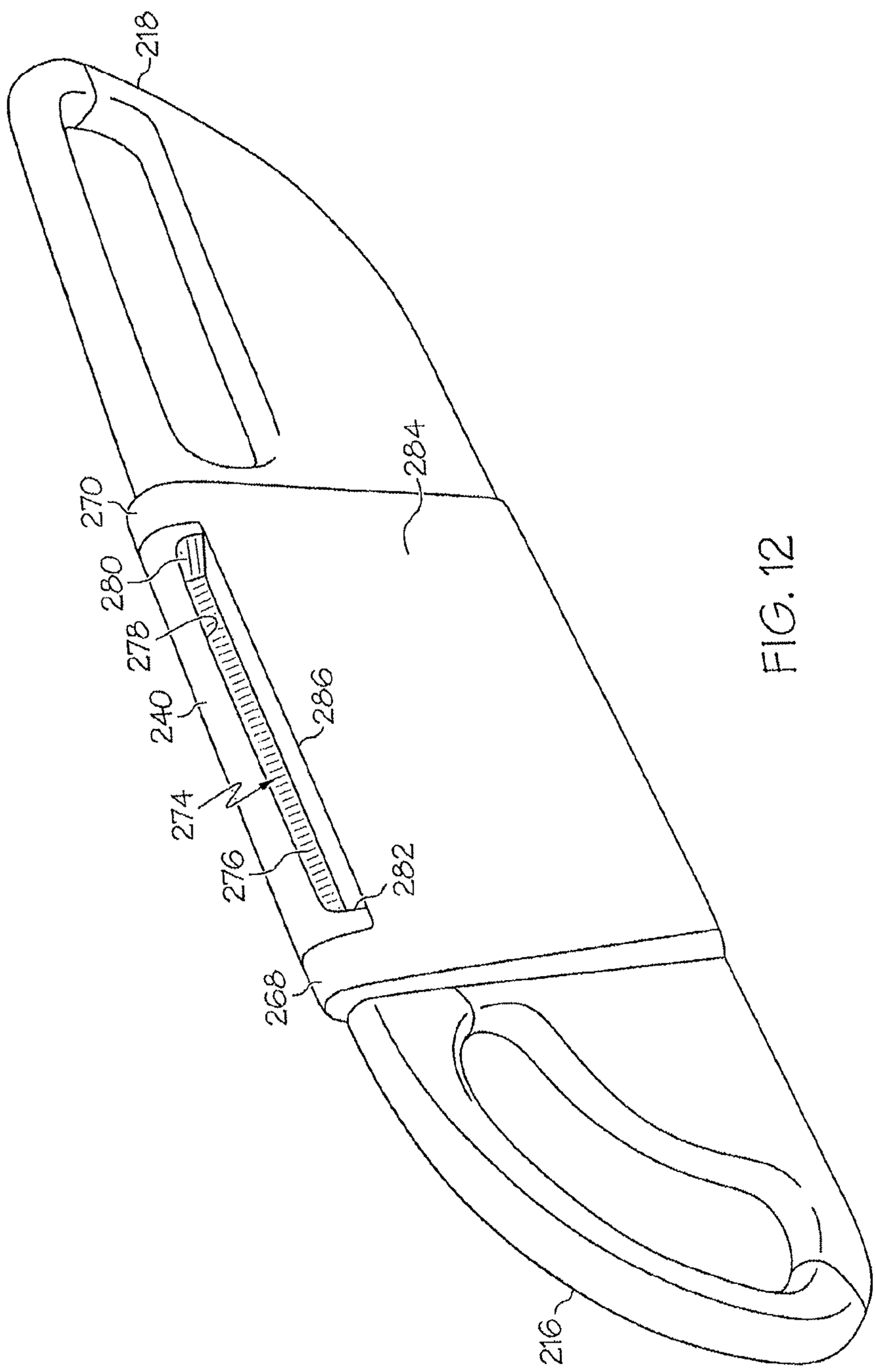

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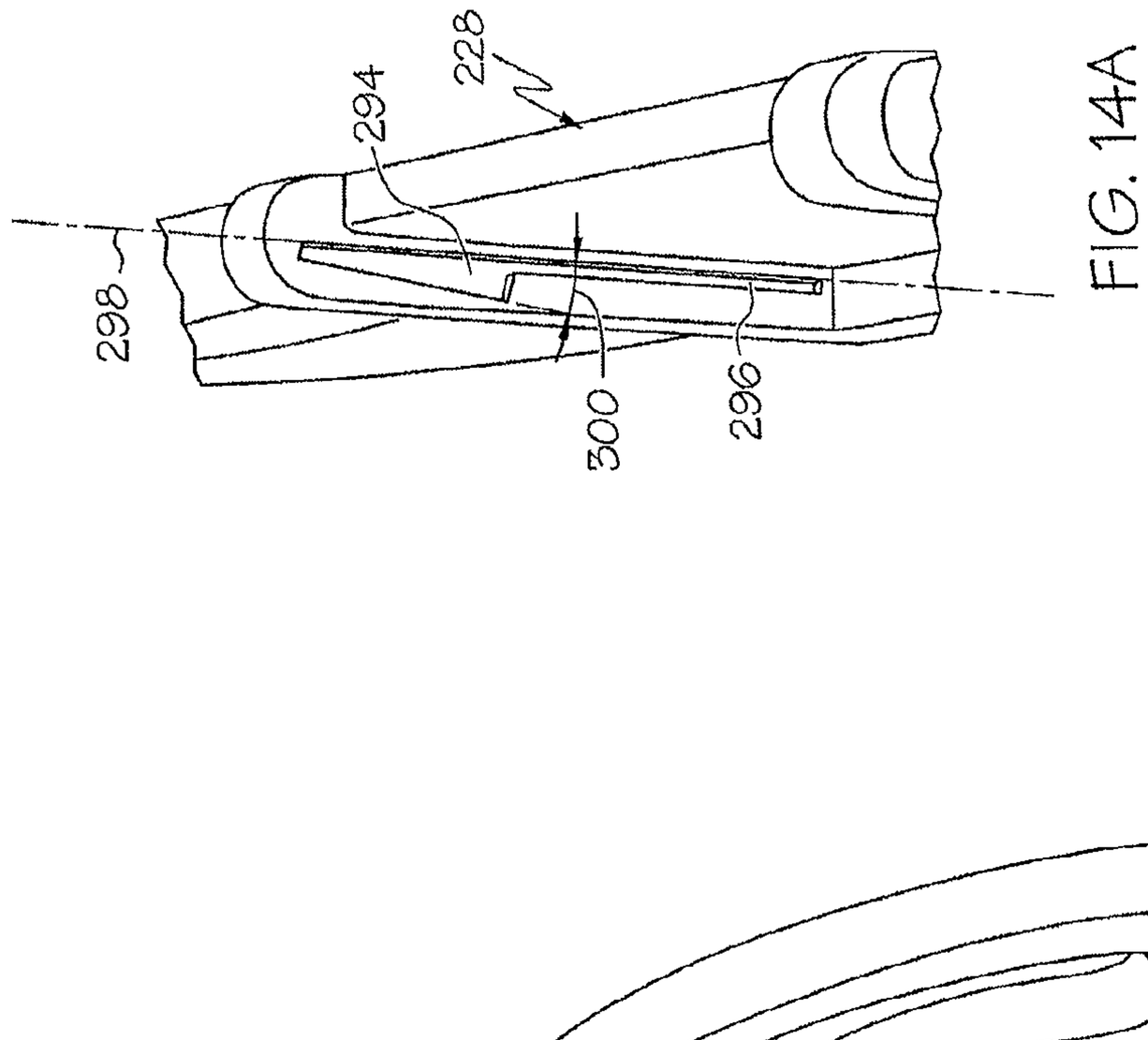

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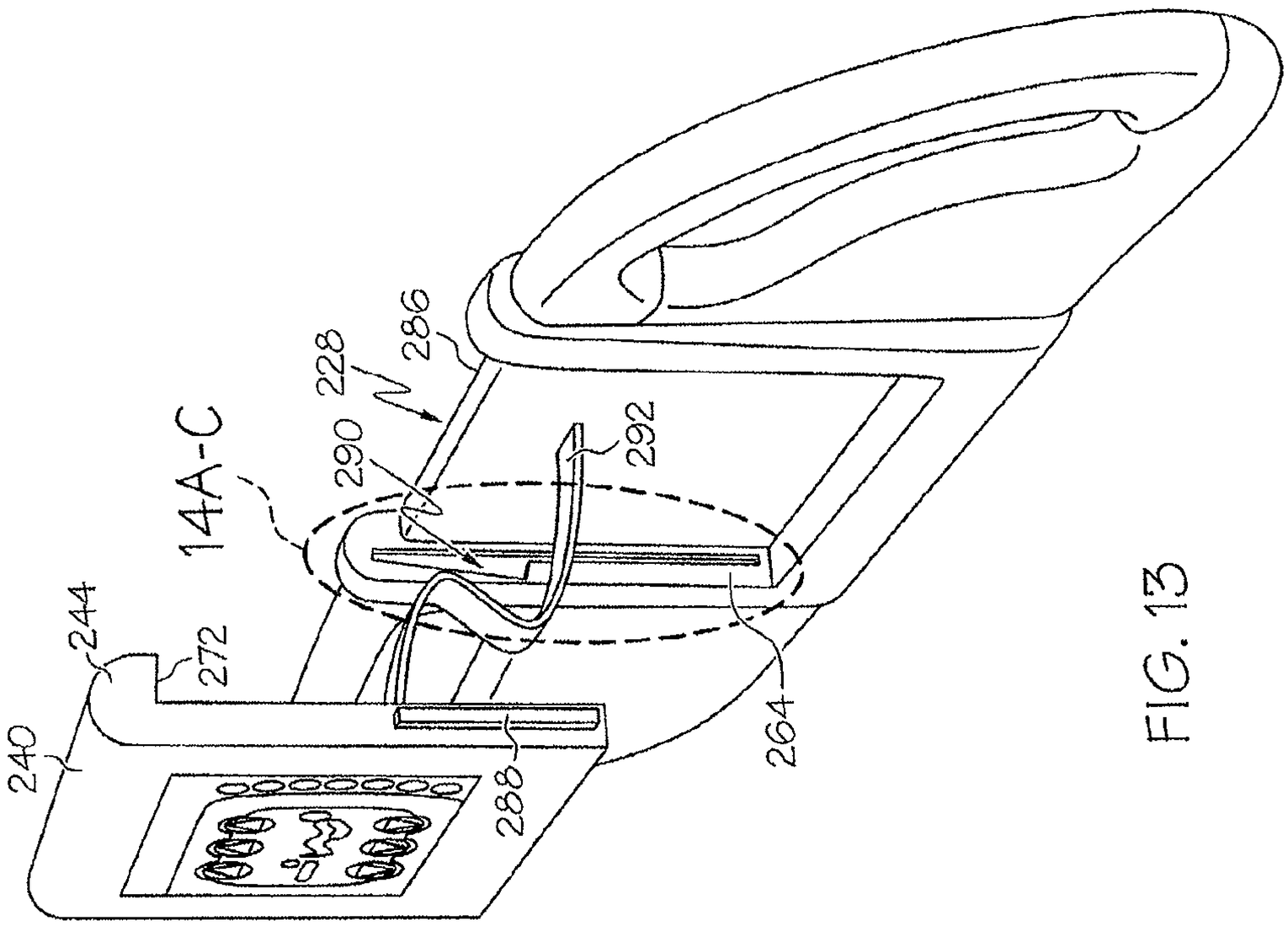

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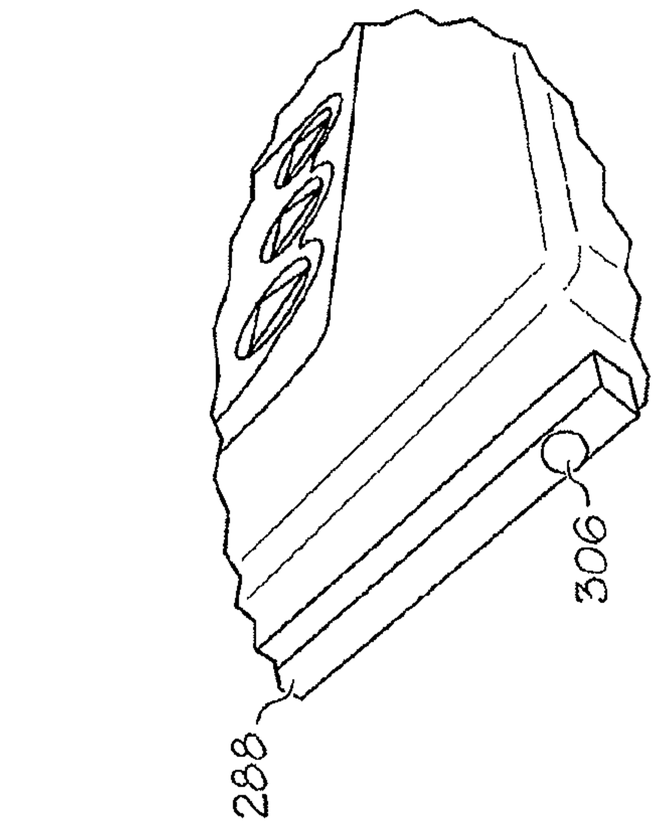

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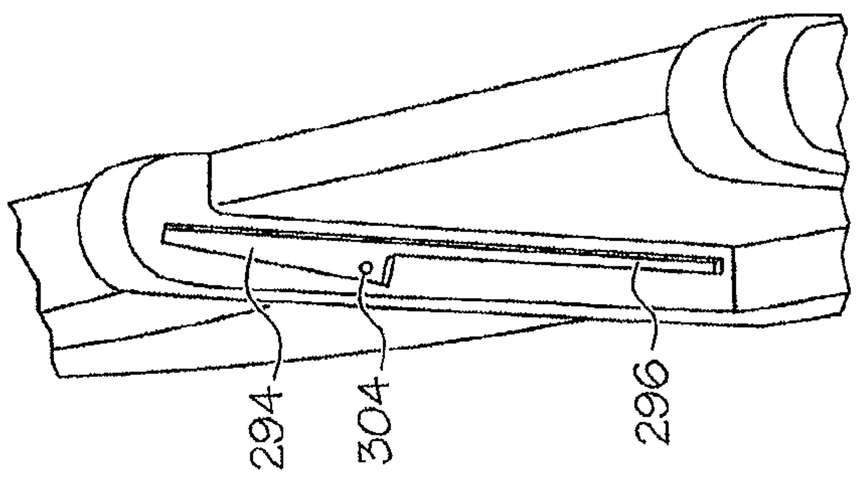


FIG. 14C

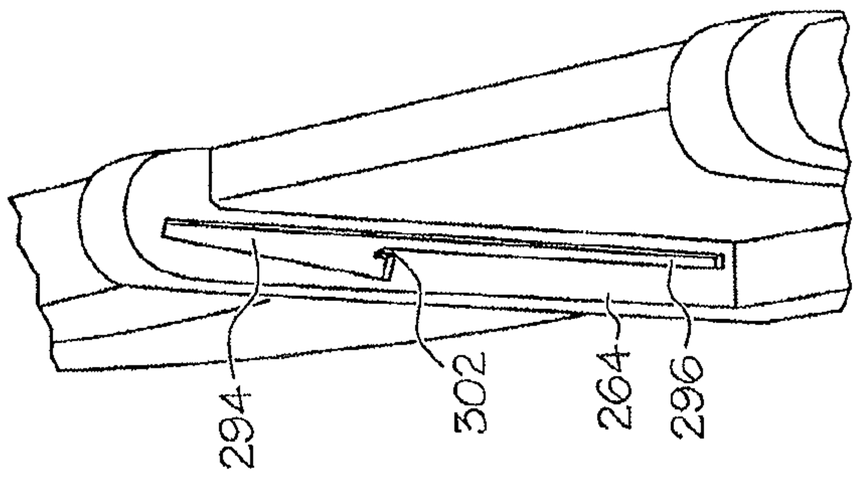
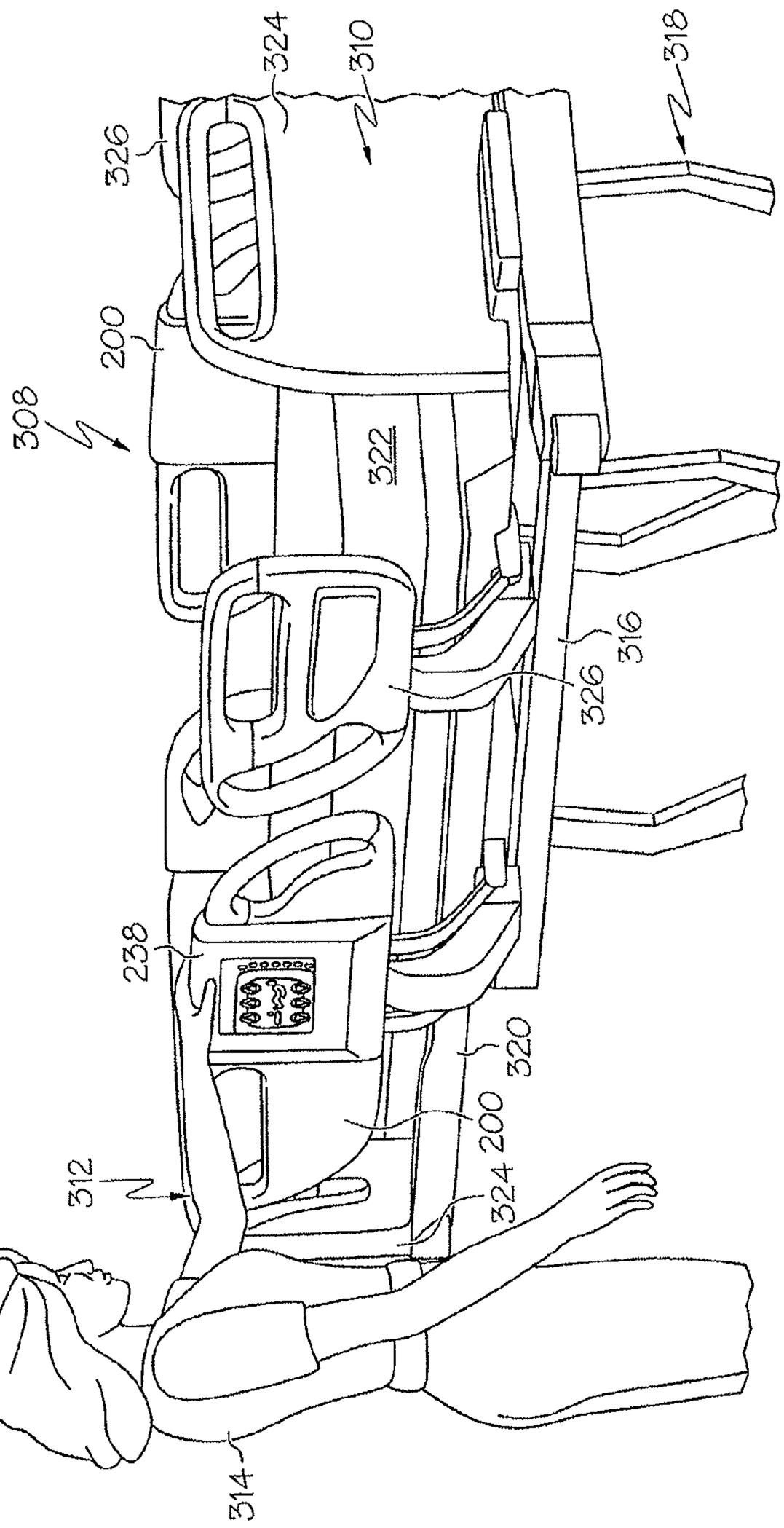


FIG. 14B



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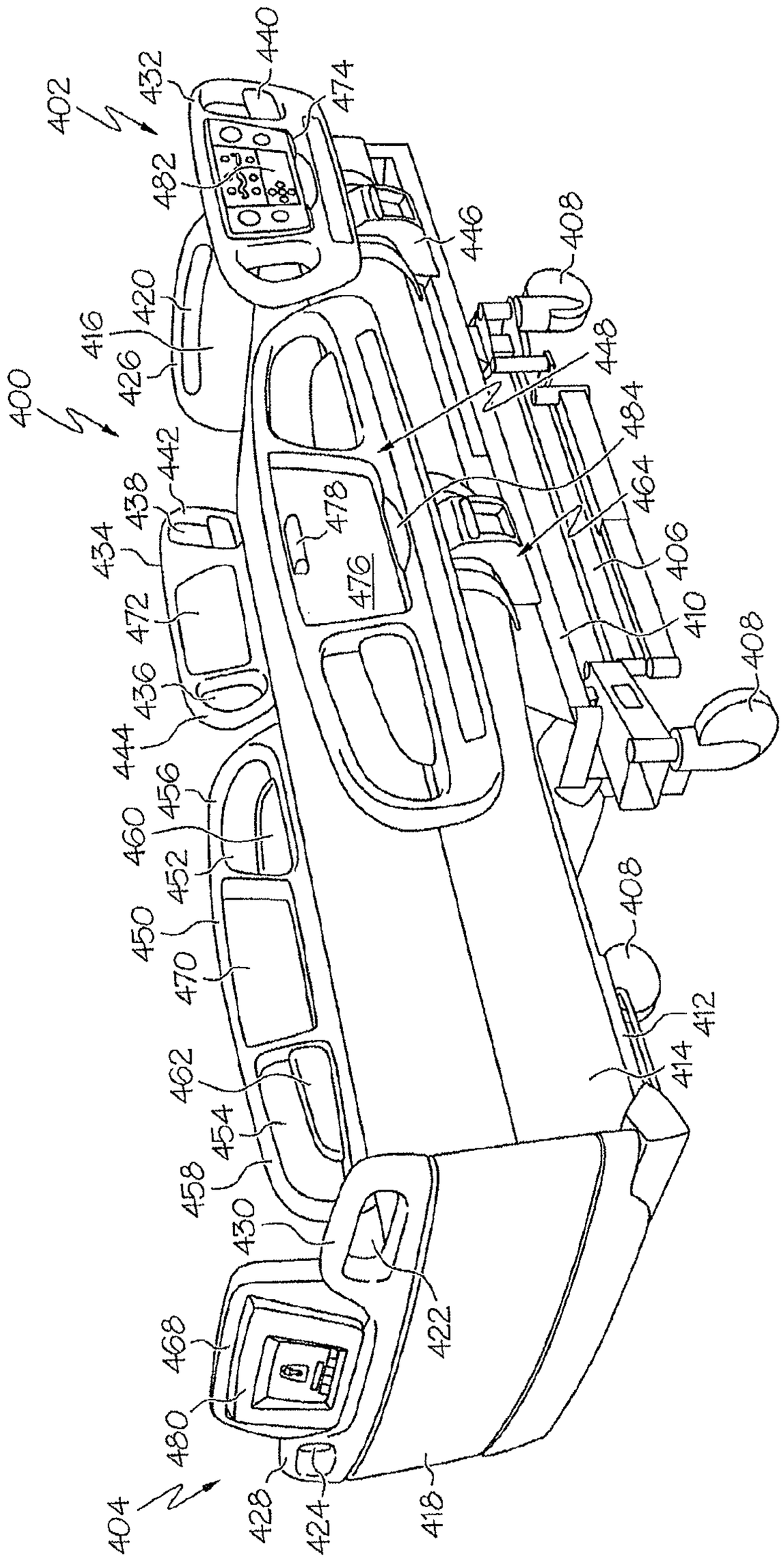
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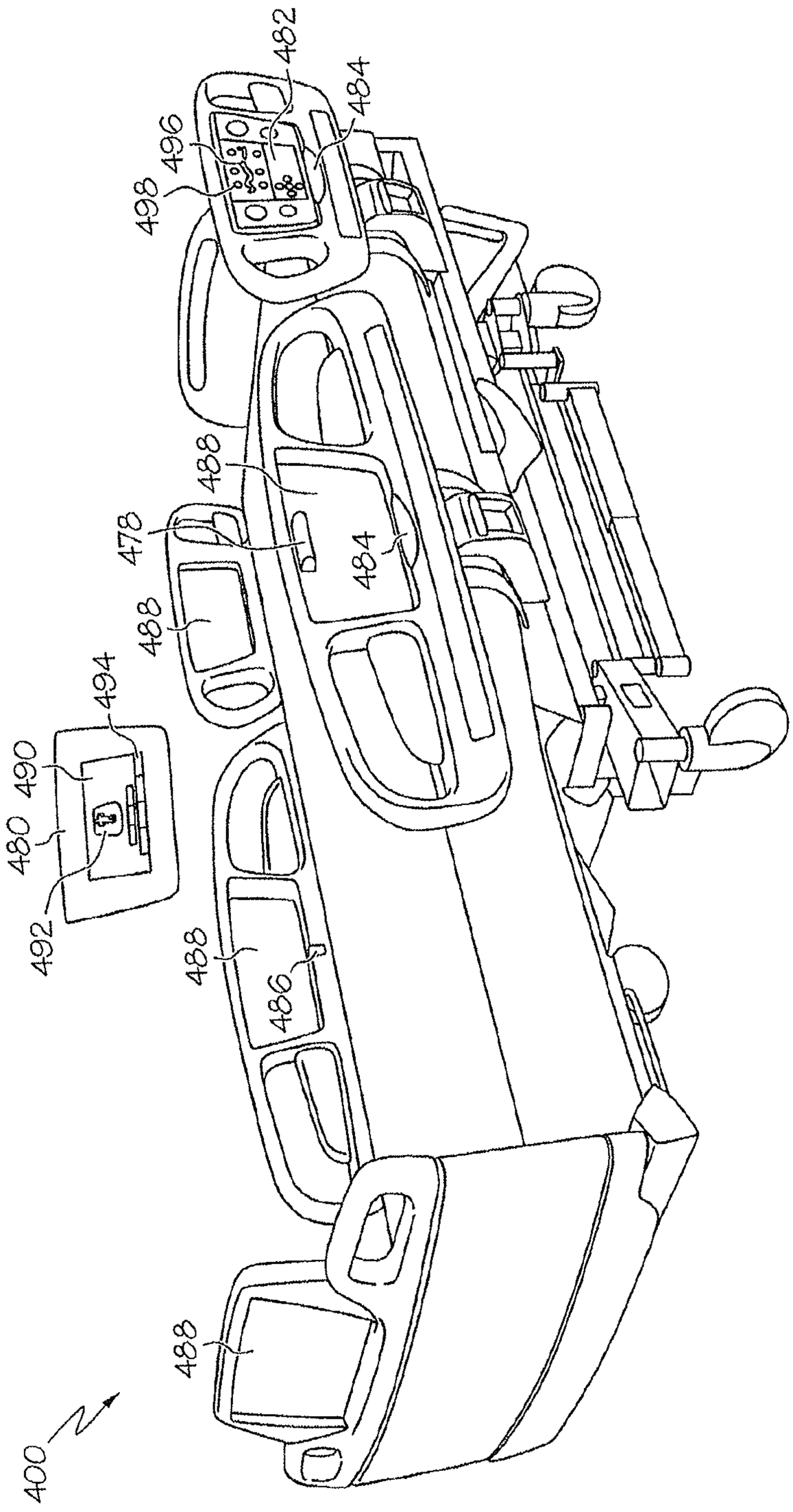
FIG. 17



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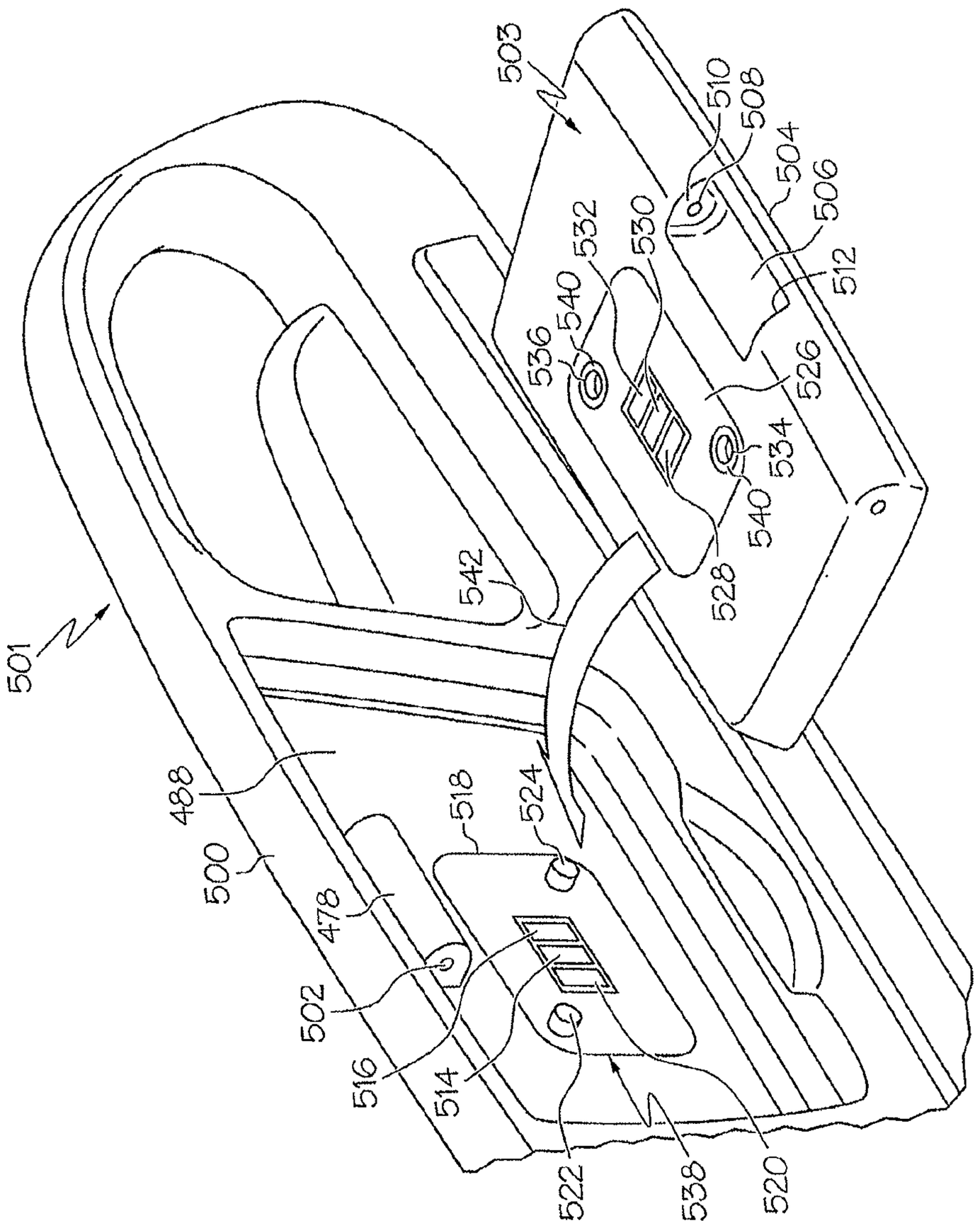
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FIG. 19

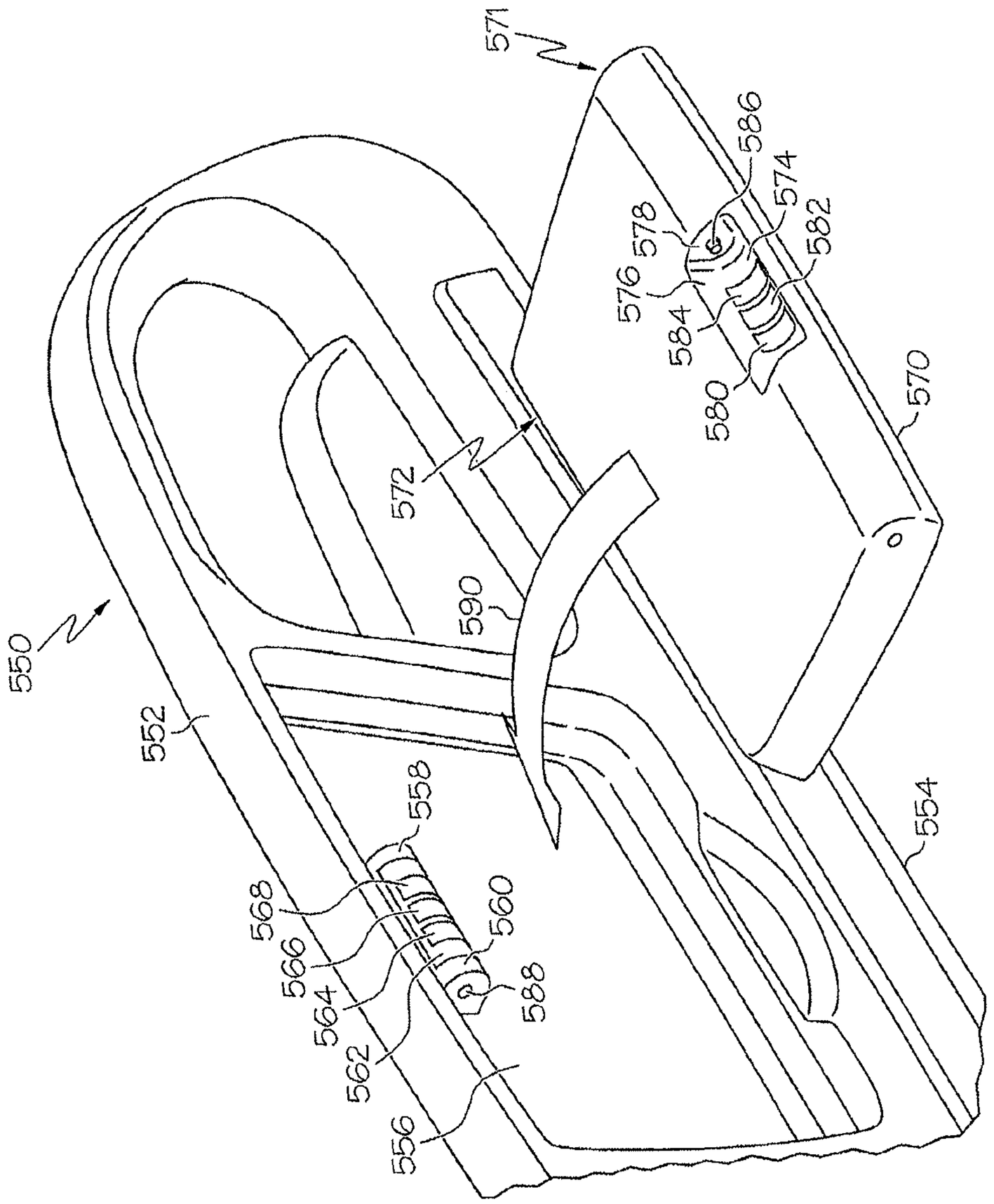
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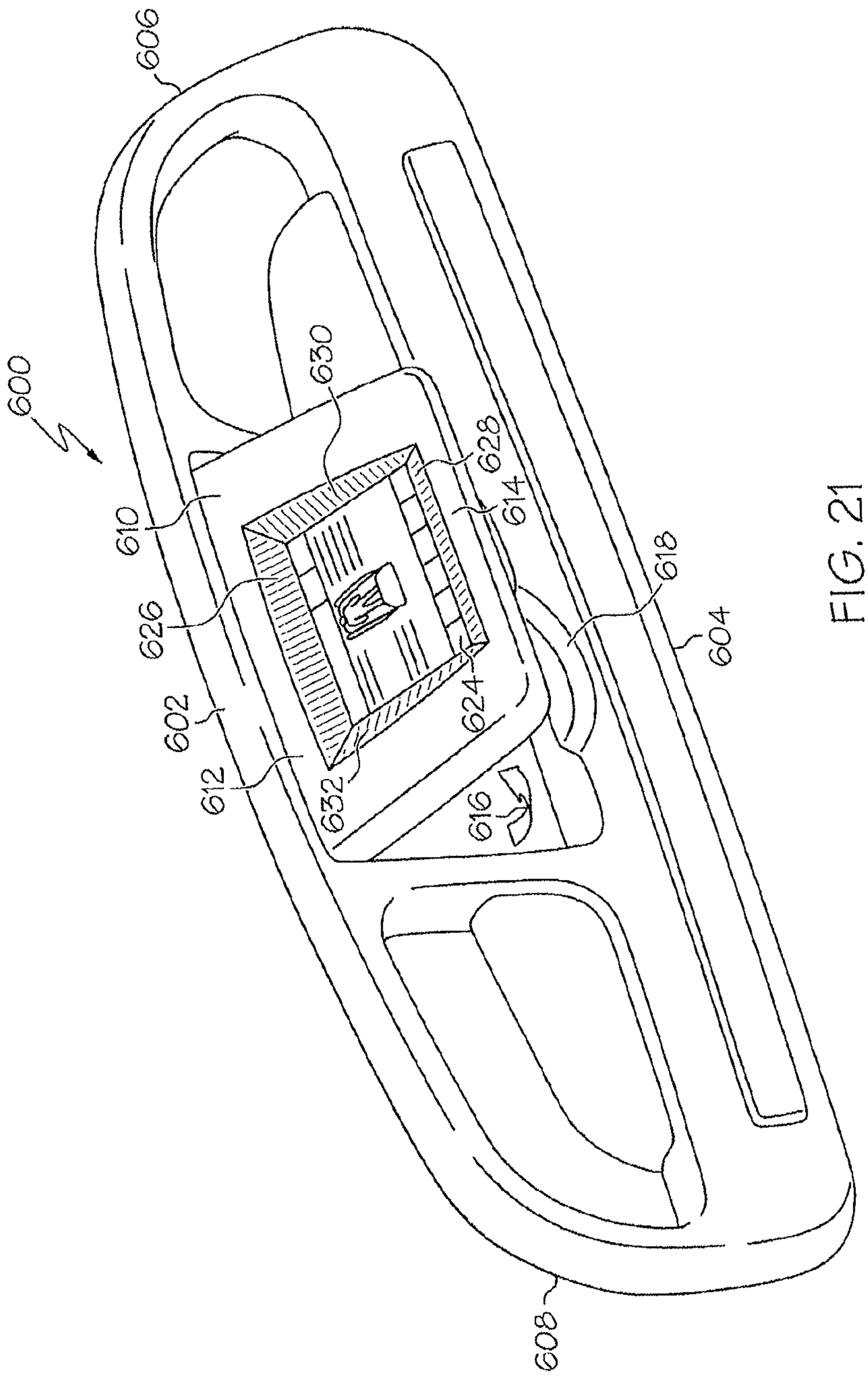
FIG. 20



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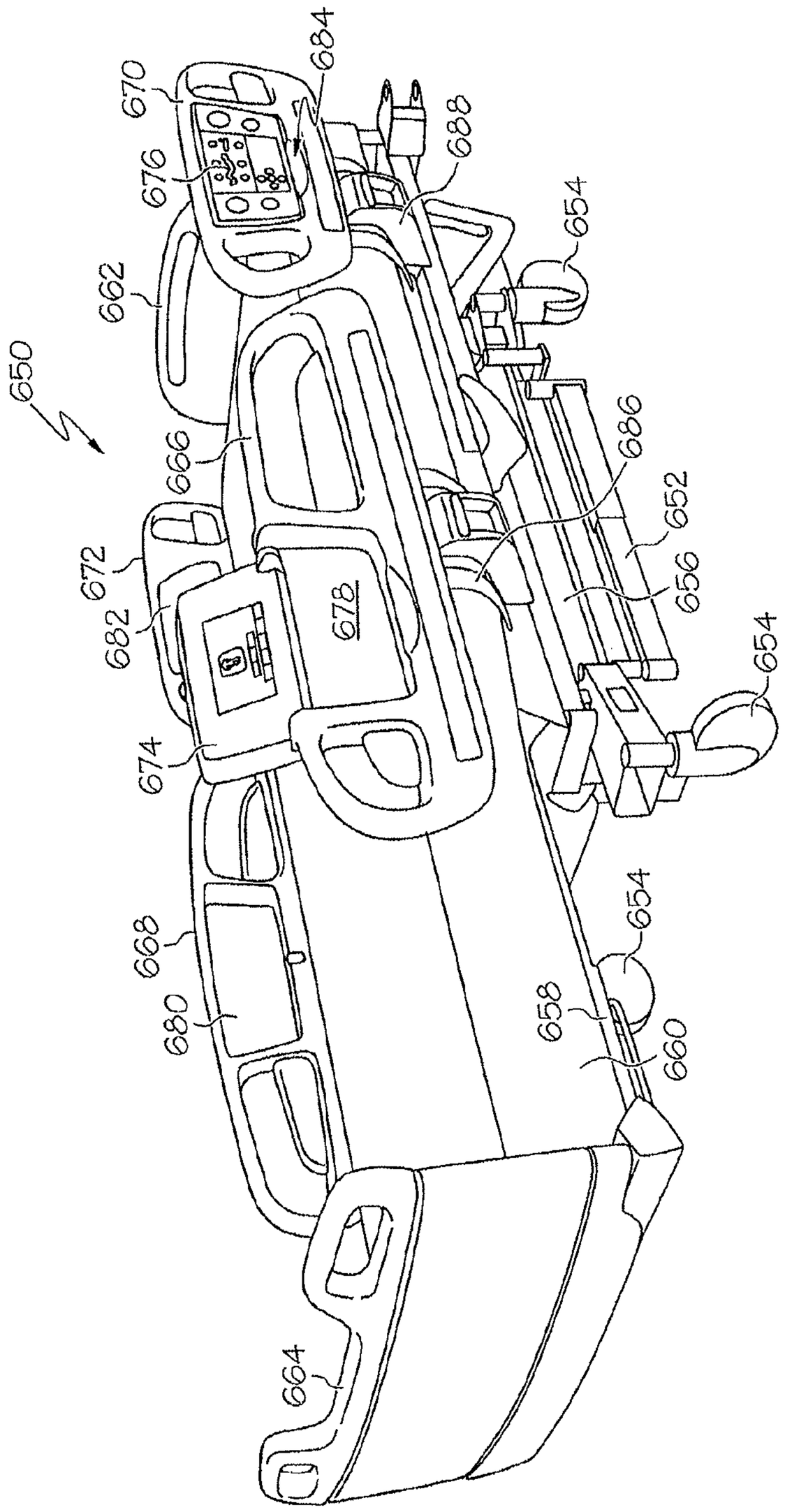
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654
666
686
652
672
682
678
656
654
674
668
654
680
658
660
664

FIG. 22

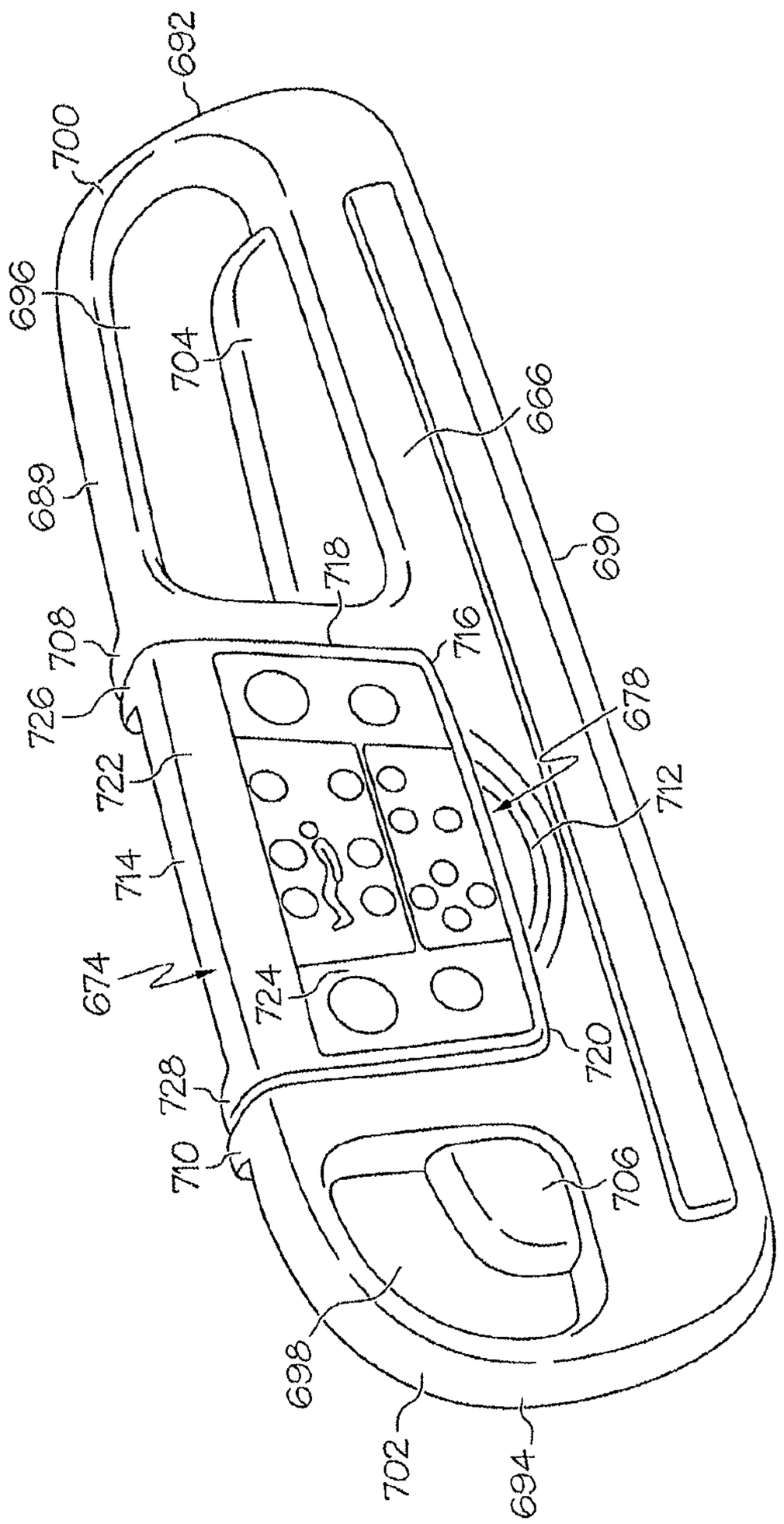
692
700
696
704
689
718
666
690
708
716
726
722
678
712
714
674
724
720
728
710
706
698
702
694

FIG. 23

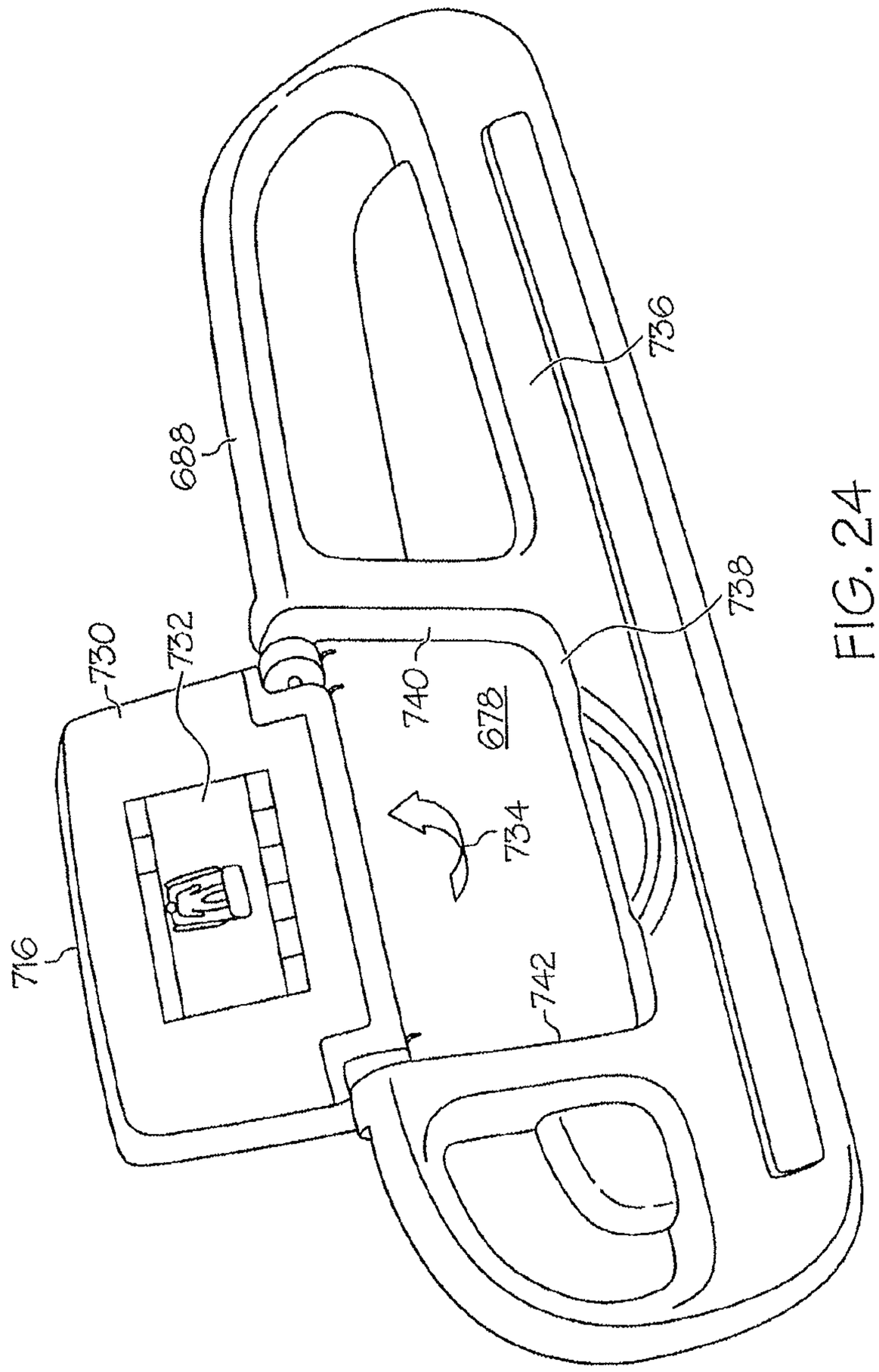

FIG. 24

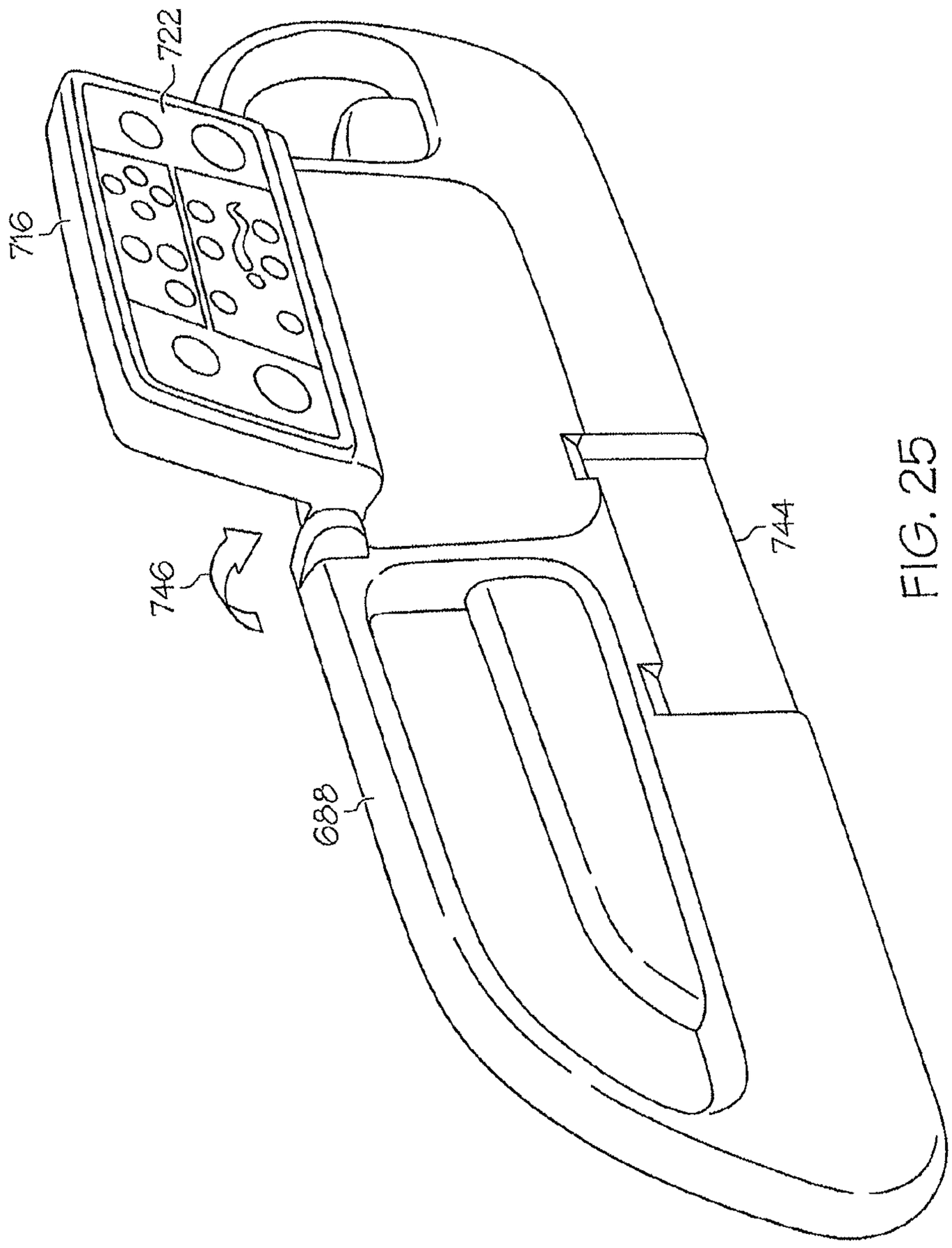

FIG. 25

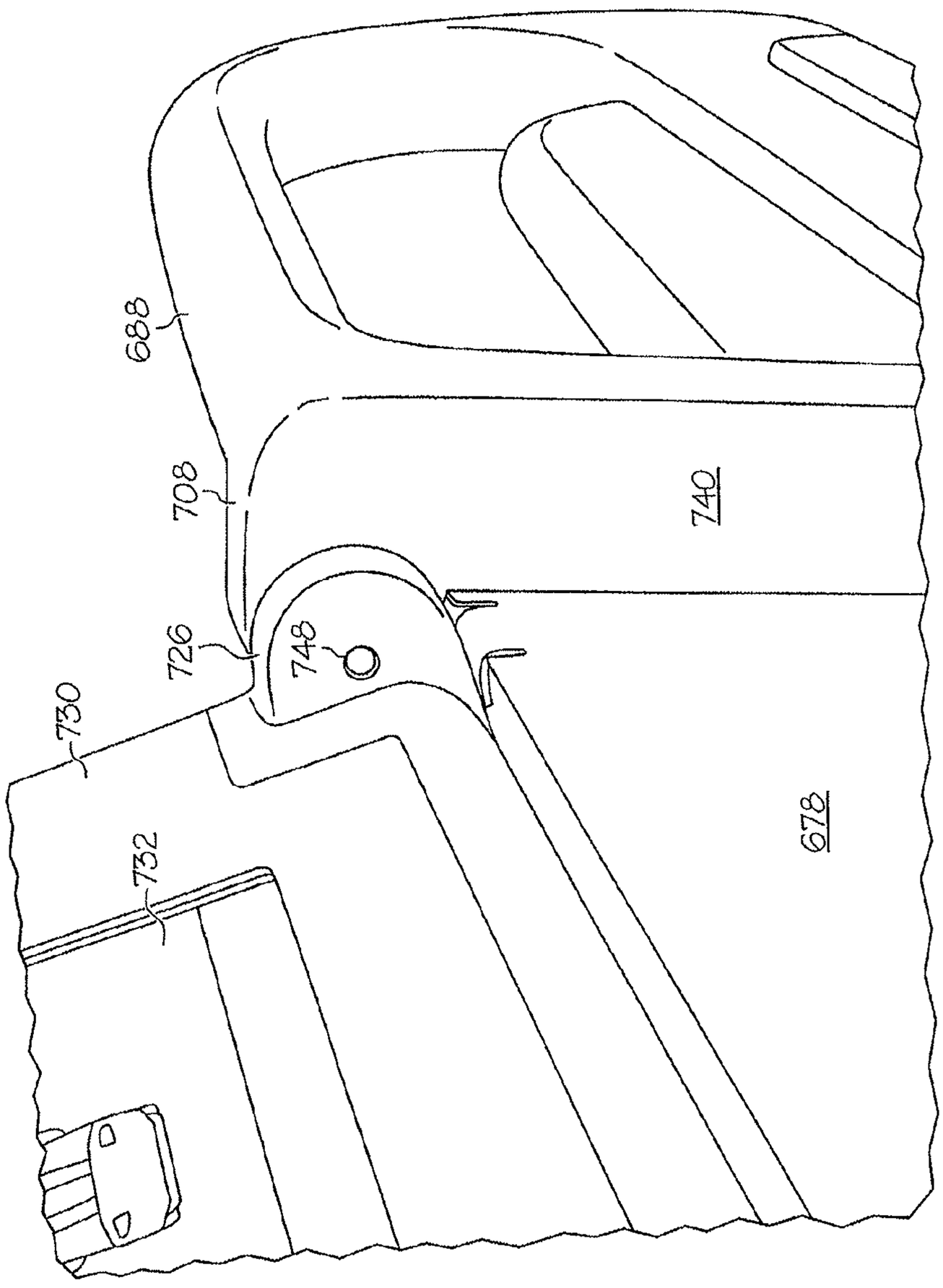

FIG. 26

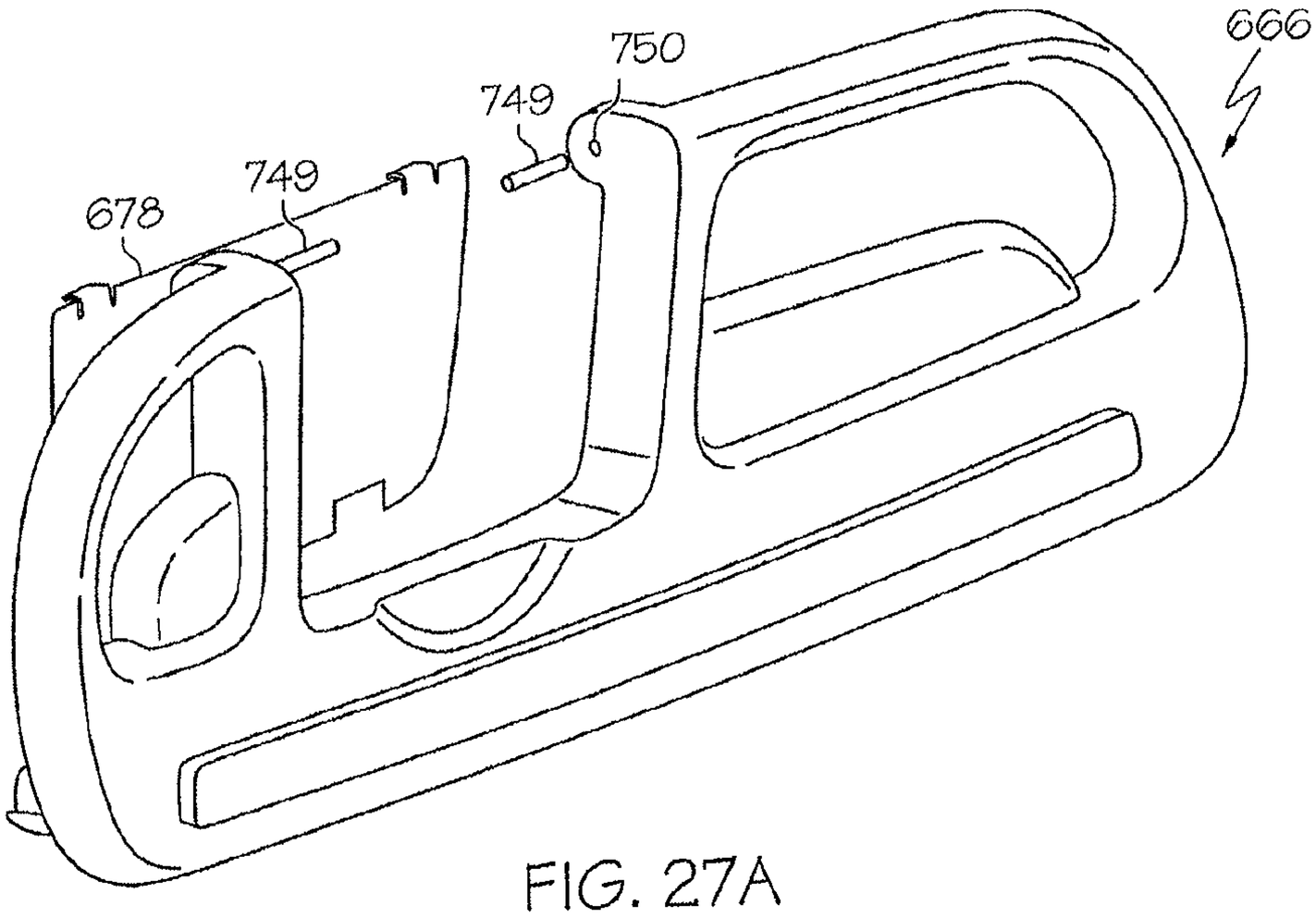

FIG. 27A

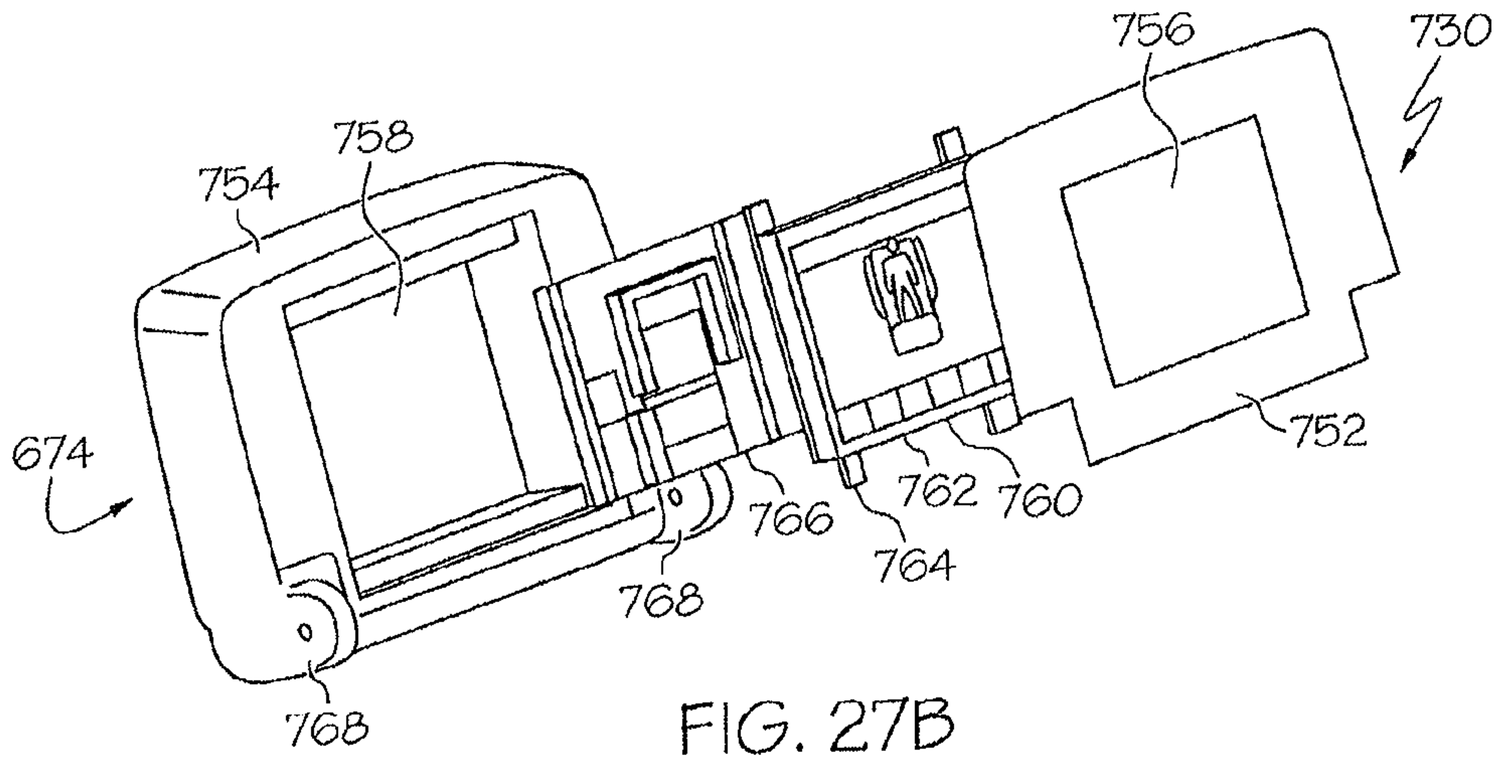

FIG. 27B

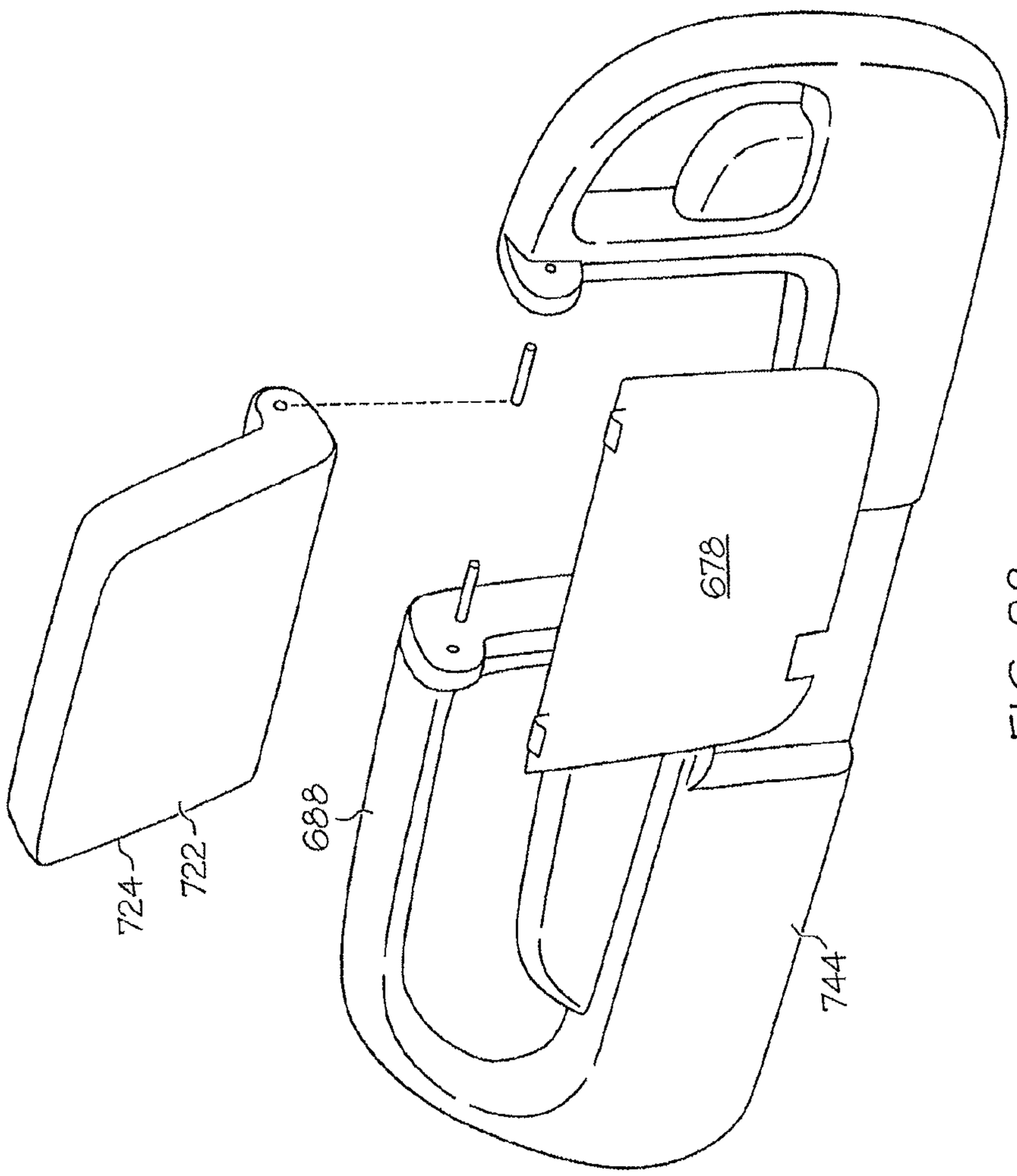

FIG. 28

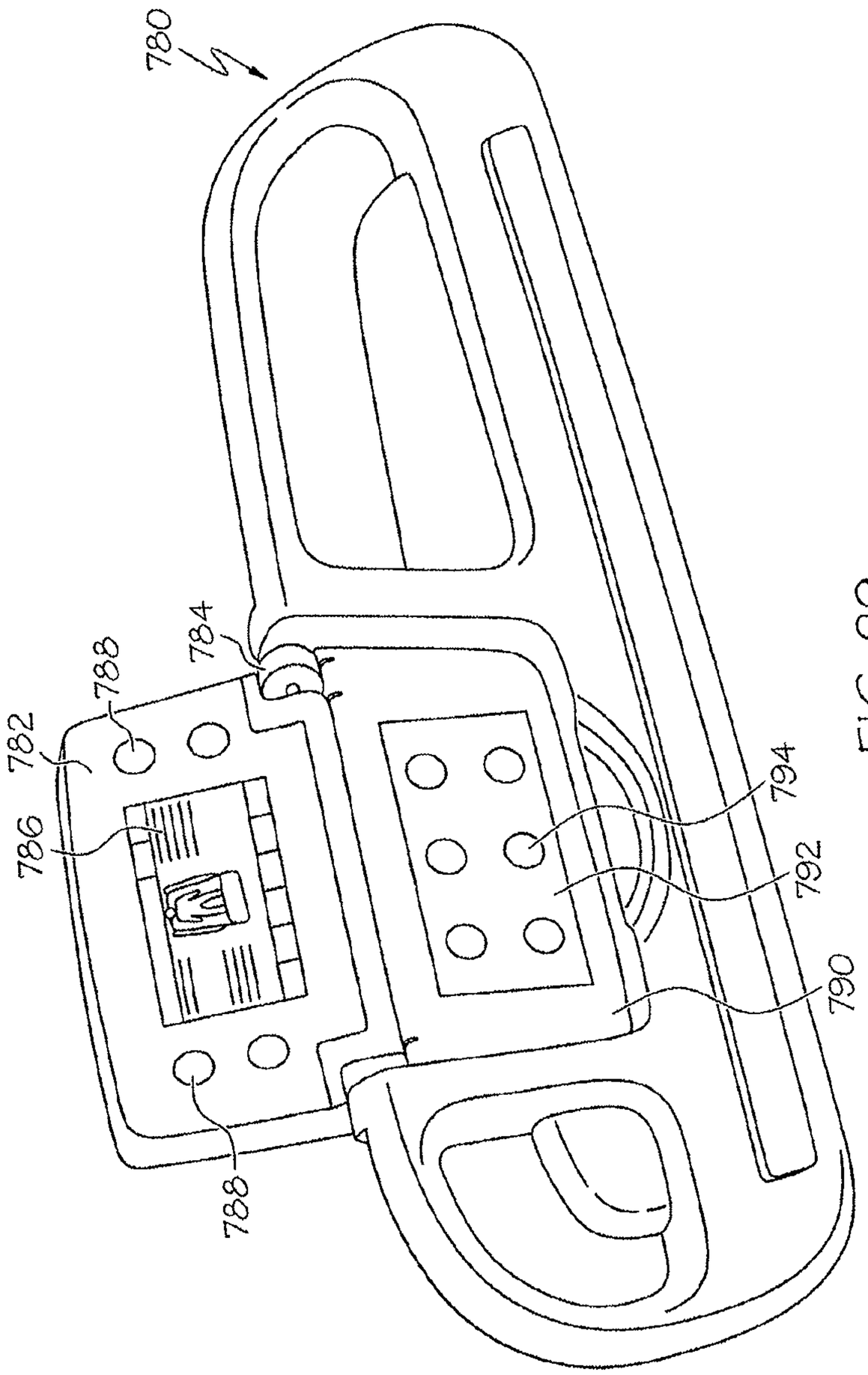

FIG. 29

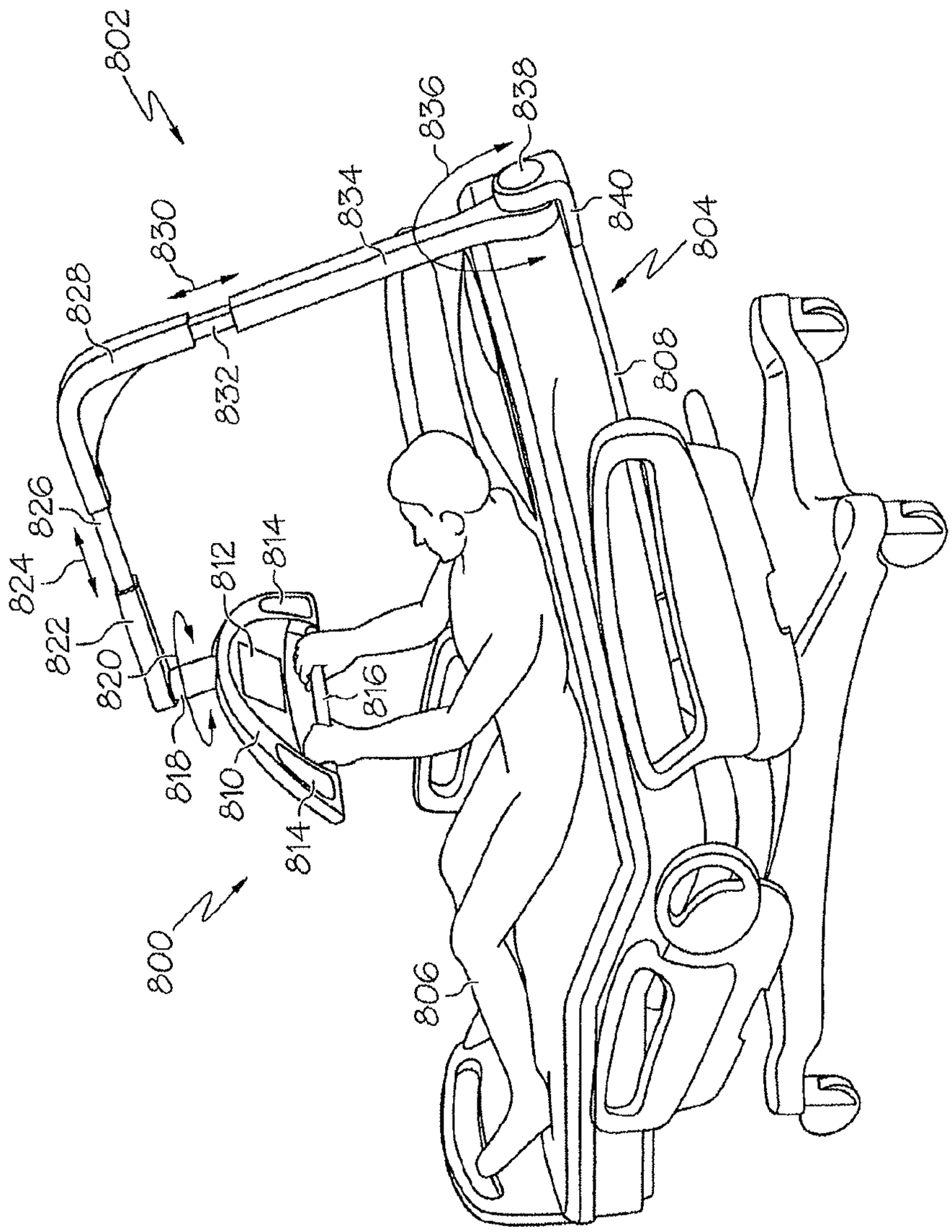
802
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FIG. 30

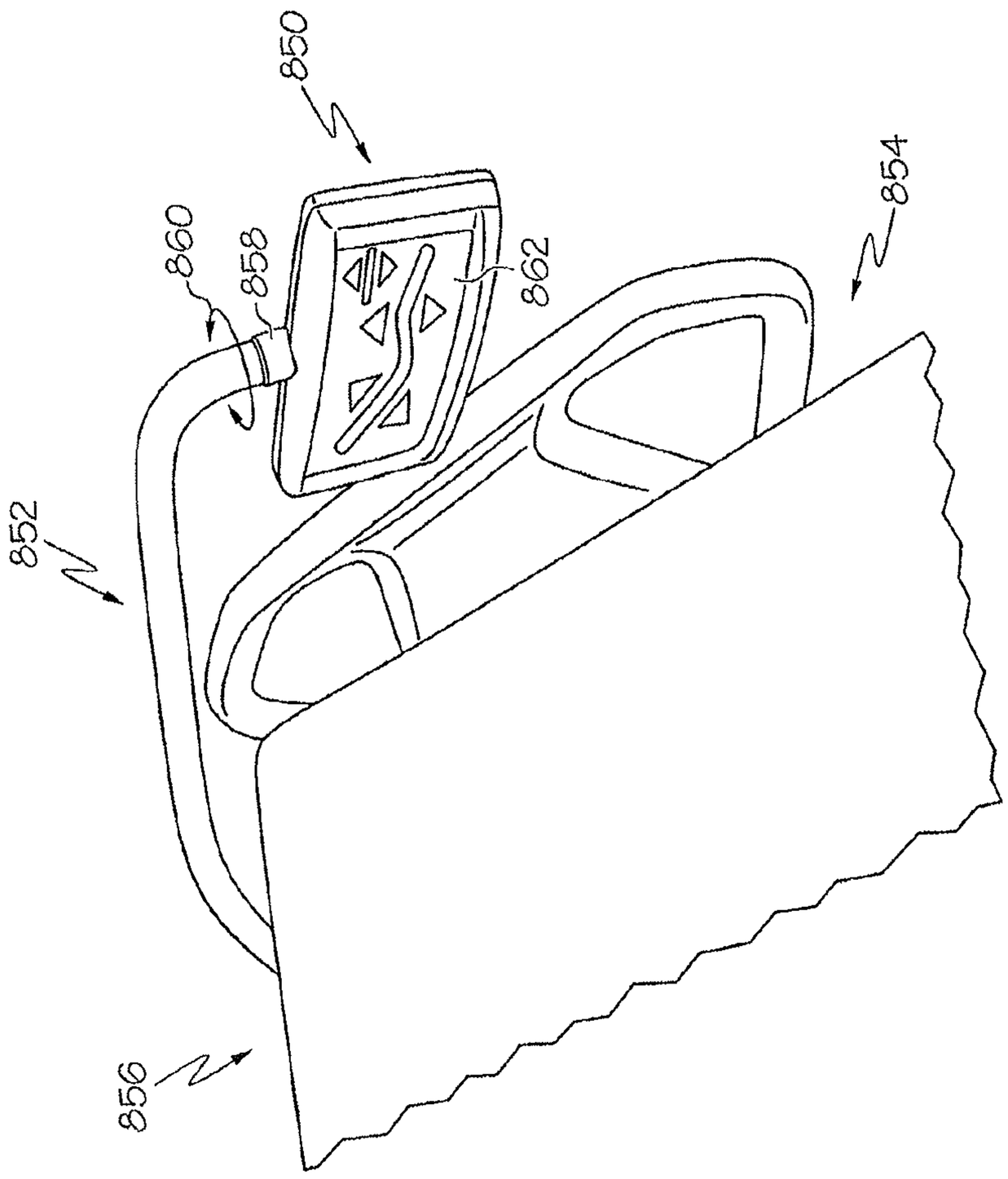
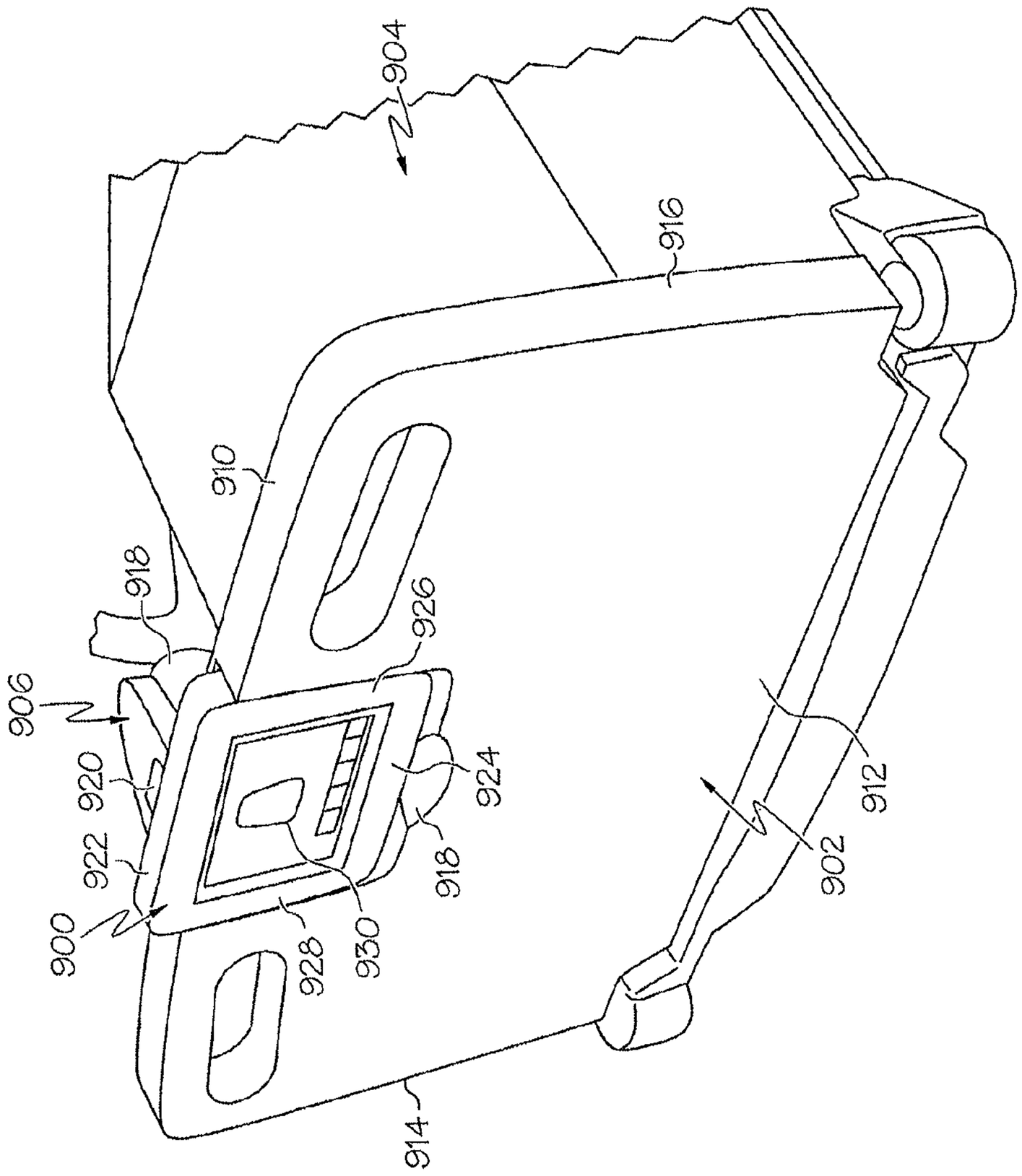


FIG. 31


904
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914

FIG. 32A

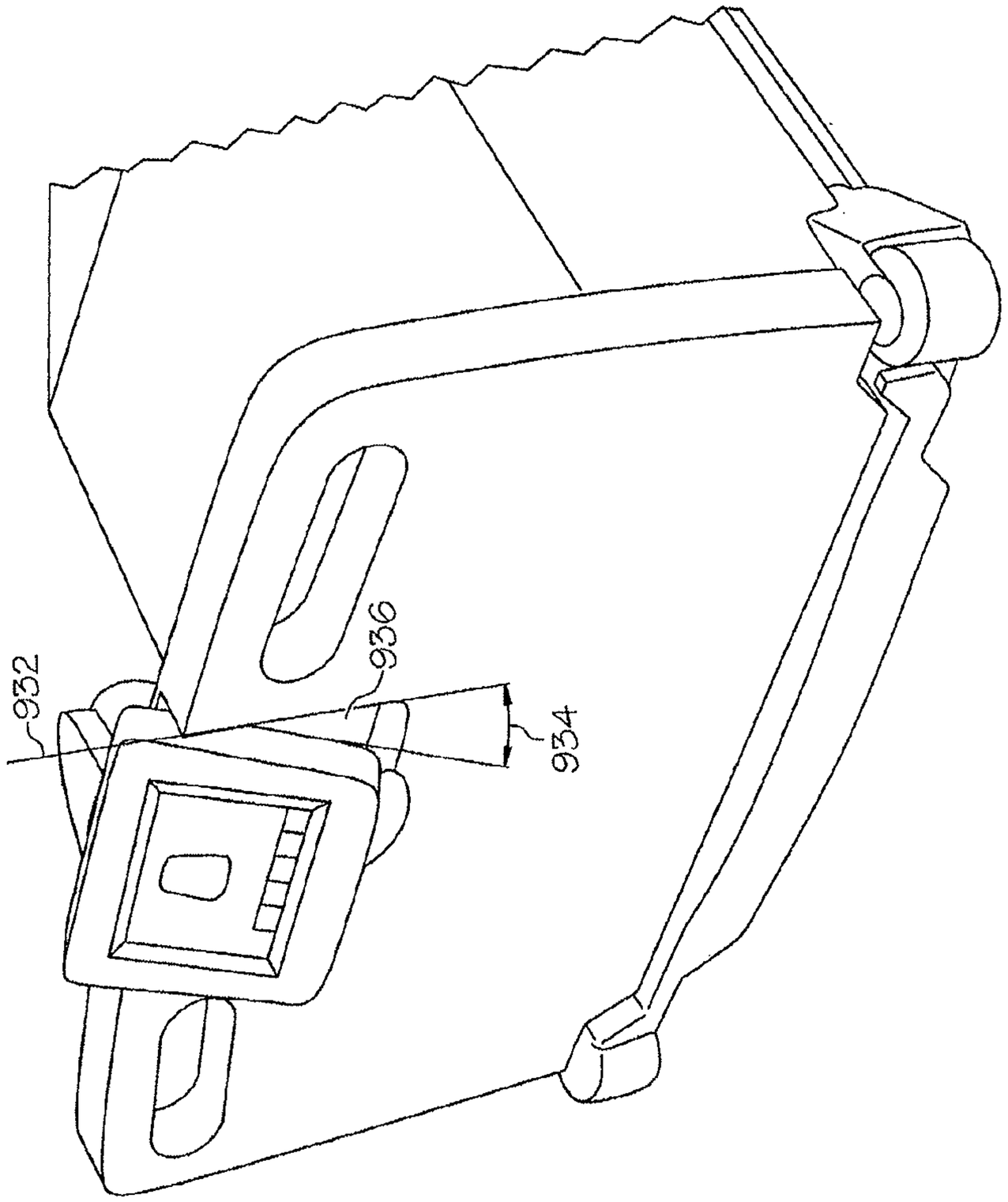

FIG. 32B

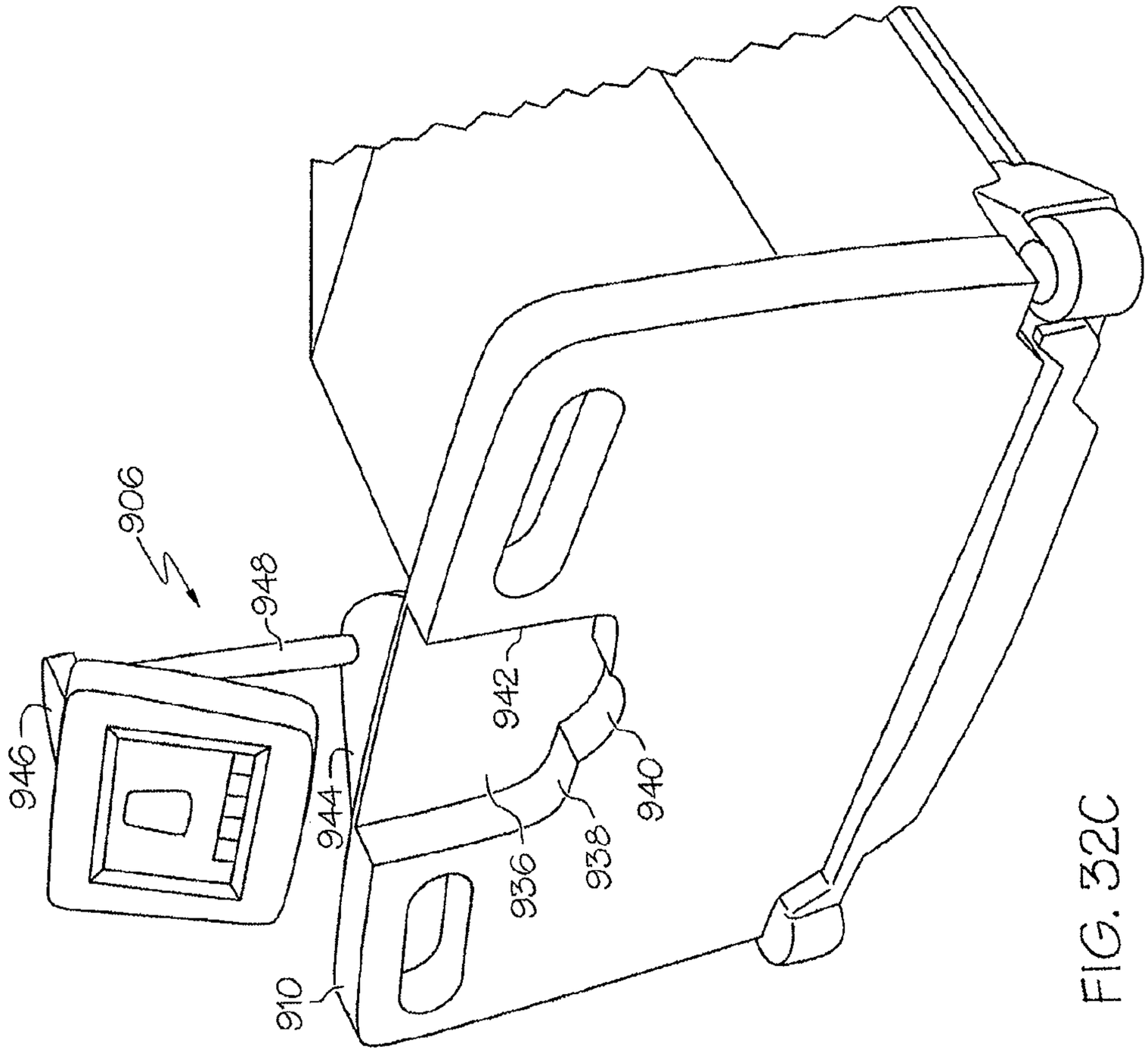

FIG. 32C

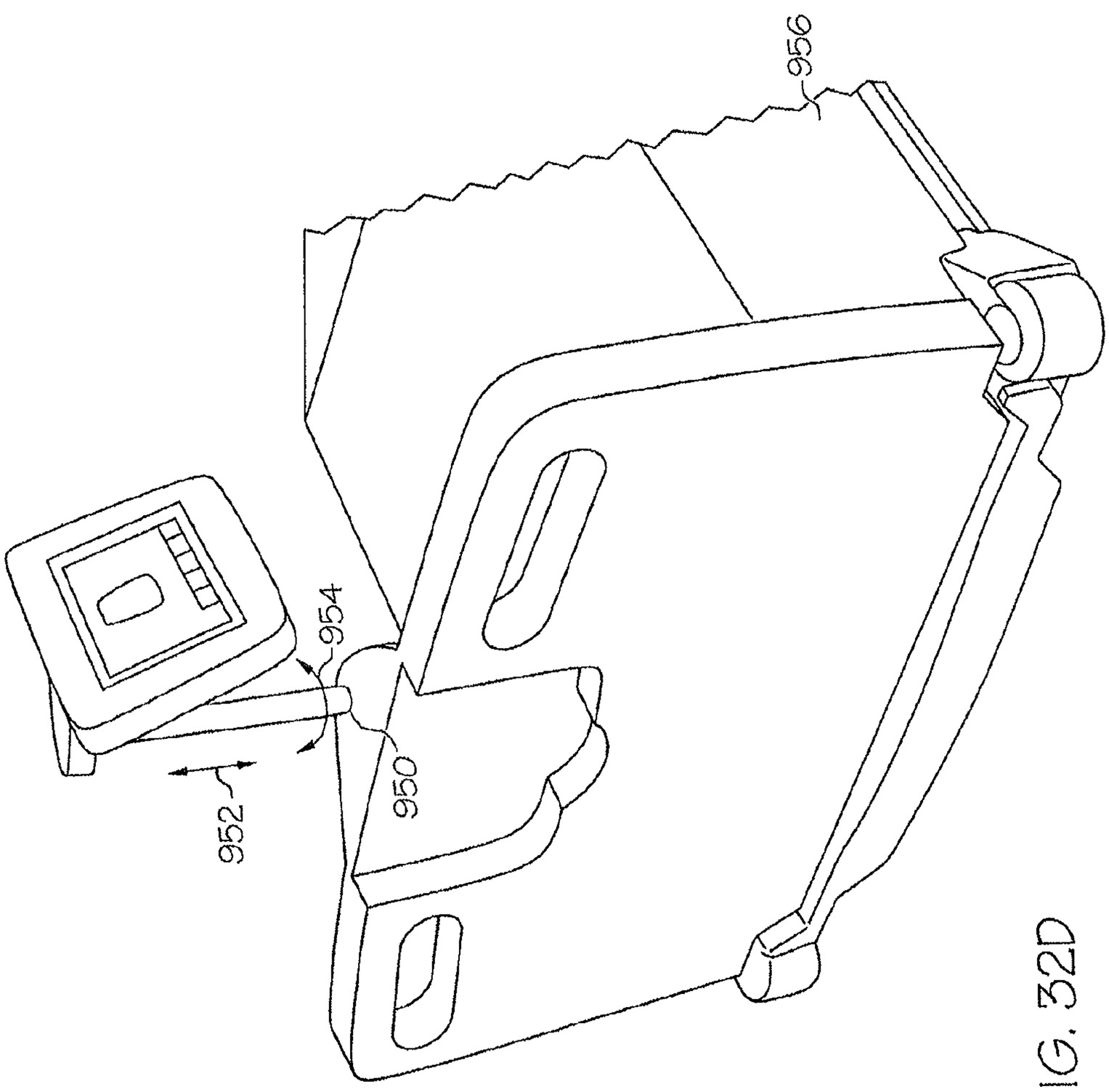

FIG. 32D

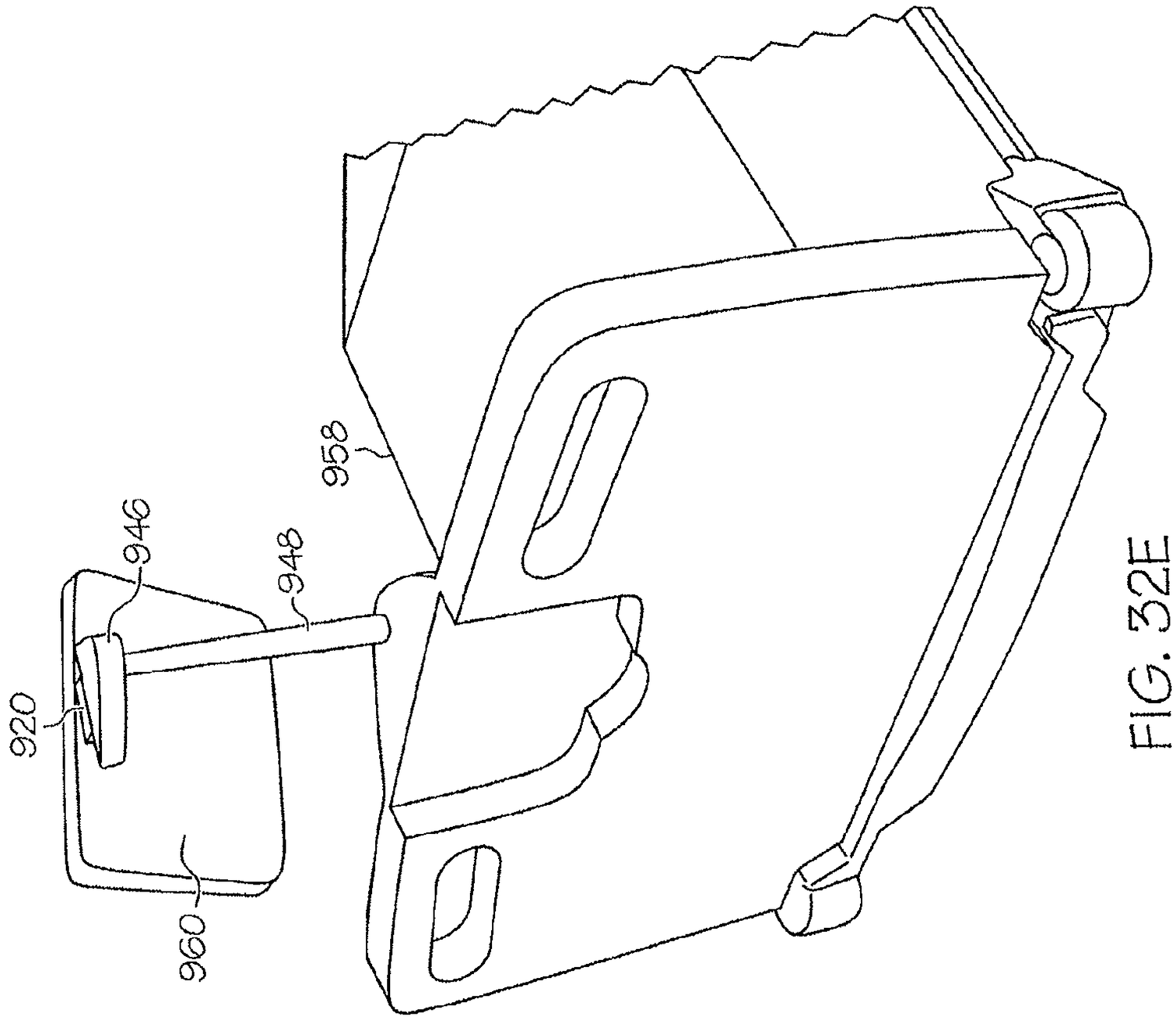

FIG. 32E

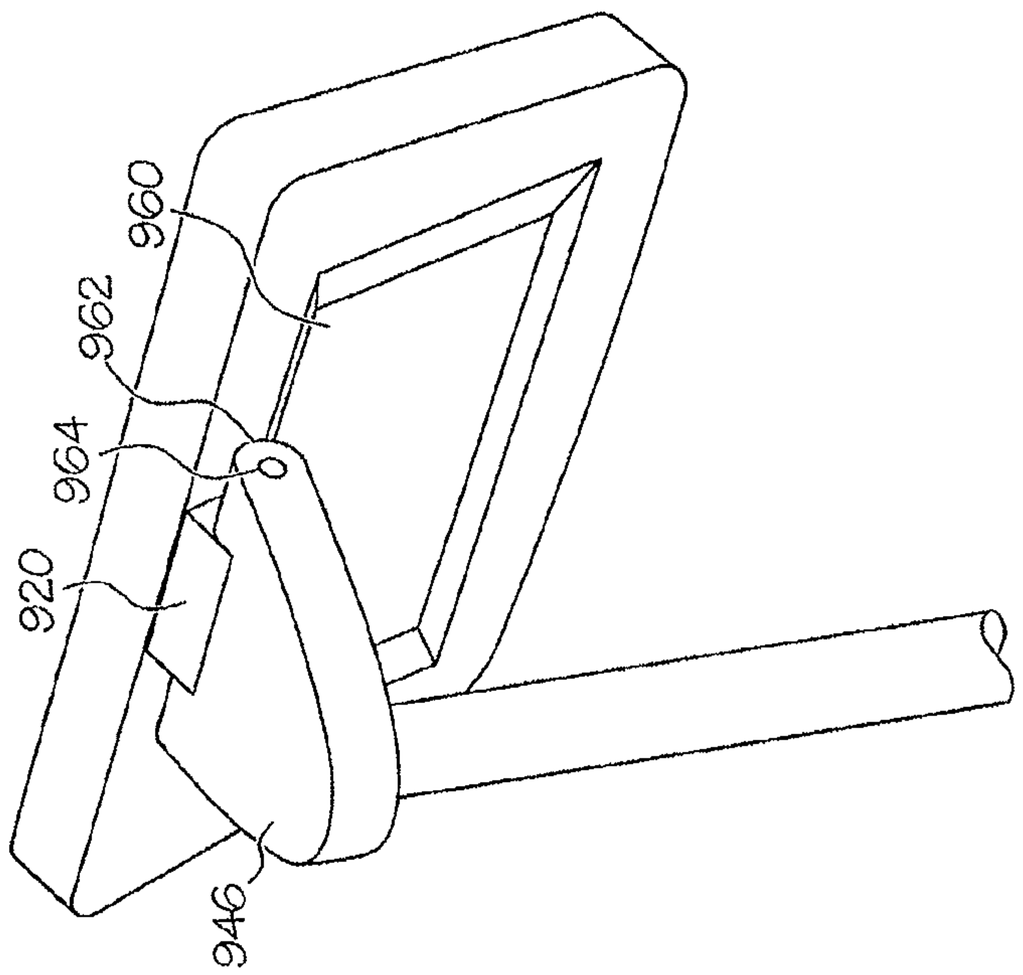

FIG. 32F

USER MODULE FOR A PATIENT SUPPORT APPARATUS

RELATED APPLICATIONS

This application is a continuation of U.S. application Ser. No. 15/798,473, filed Oct. 31, 2017, now U.S. Pat. No. 10,842,695, which is a continuation of U.S. application Ser. No. 14/452,081, filed Aug. 5, 2014, now U.S. Pat. No. 9,827,157, which is a continuation of U.S. application Ser. No. 11/672,274, filed Feb. 7, 2007, now abandoned, which claimed the benefit of U.S. Provisional Application No. 60/771,318, filed Feb. 8, 2006, and each of which is incorporated herein by this reference.

This application is related to Patent Cooperation Treaty Patent Application No. PCT/US2007/061765, entitled USER MODULE FOR A PATIENT SUPPORT, filed Feb. 7, 2007, and which is incorporated herein by this reference.

BACKGROUND

Patient supports, such as hospital beds, stretchers, operating room tables, and the like, are commonly used in a variety of care environments to facilitate patient care and transport.

User modules are often provided to enable a user to perform a variety of automated functions relating to a patient support. Examples of such automated functions include raising or lowering one or more sections of the patient support, adjusting the configuration of a bed frame or mattress or portion thereof, and activating or deactivating selected therapies, alarms, communications, and other automated features of the patient support. As such, user modules may be operably coupled to a bed or mattress controller or control system, a remote computer, an air supply or other like service supply.

Many conventional user modules are either fixed in a siderail of the patient support, or are provided as pendants that may be stored in the siderail and removed from the siderail for use. However, many conventional patient support user modules are cumbersome for a caregiver, patient, or technician to use due to poor ergonomic positioning or design.

Particularly with graphic displays, such as touchscreen displays, poor ergonomic positioning or design can result in an undesirable angle between the user and the user module, which makes the controls on the user interface difficult to see and operate.

Poor ergonomic design or positioning of the user module can also make the user module itself difficult or cumbersome to use. For example, two hands may be required, with one hand being used to steady the module while the other hand operates the user interface.

In addition, the method of attachment of the user module to the patient support (i.e., by linkages, arms, wires, cords and the like) and location of such attachments may require the user to bend down, reach across the body, or assume some other uncomfortable position in order to access and use the module.

SUMMARY

In one embodiment of the present invention, a patient support apparatus including a siderail is provided. The siderail has a first end, a second end spaced from the first end, a top edge and a bottom edge defining a periphery of the siderail, a vertical axis extending substantially perpendicular to the top edge of the siderail, and a first user module positioned within the periphery of the siderail at an angle in the range of about 5-30 degrees from the vertical axis.

The first user module may include a touchscreen display. The touchscreen display may be positioned at an angle in the range of about 10-15 degrees from the vertical axis. The patient support apparatus may include a second user module located adjacent the first user module within the periphery of the siderail. The second user module may include at least one hardpanel control. The second user module may be positioned at an angle of about 0 degrees from the vertical axis.

In another embodiment of the present invention, a patient support apparatus is provided, including at least one siderail. The siderail may include a top portion, a bottom portion spaced from the top portion, a first end and a second end spaced from the first end, a recessed area defined by a back panel and at least two indented sides, and a non-recessed area, a vertical axis extending substantially perpendicular to the top portion of the siderail, and a touchscreen user interface positionable within the recessed area at an angle greater than 0 degrees with respect to the vertical axis.

The patent support apparatus may include a non-touchscreen user interface provided on the non-recessed area. The touchscreen user interface may be pivotably coupled in the recessed area. The patient support apparatus may include at least one bumper located adjacent the recessed area. A touchscreen user interface may be provided in a housing having a top portion, a bottom portion spaced from the top portion, a first side and a second side spaced from the first side. A pivot coupler pivotably coupling the top portion of the housing in the recessed area of the siderail may be provided. A bottom portion of the user interface housing may include a concavely shaped edge.

In another embodiment of the present invention, a patient support apparatus including at least one siderail is provided. The siderail includes a first end, a second end spaced from the first end, and a docking region located between the first and second ends. At least one guide track is located in the docking region. A user module including a touchscreen display is also provided. The user module includes a guide bar configured to be slidably received by the guide track.

The docking region may be a recessed area defined by a back panel and two opposing sides, and the guide track may be located on one of the sides. The guide track may include an angled portion sized to receive the guide bar to position the user module at an acute angle with respect to a vertical axis of the siderail.

In another embodiment of the present invention, a patient support apparatus is provided. The patient support apparatus includes a base, a frame supported by the base, the frame having first and second spaced longitudinal sides and first and second spaced ends, a first barrier positionable along one of a side and an end, a second barrier positionable along one of a side and an end, a first user module docking region located in the first barrier, and a second user module docking region located in the second barrier.

The first and second barriers may be siderails positionable along the first and second sides of the frame. The first barrier may be a siderail and the second barrier may be a footboard. The first docking region may be configured to receive a first user module including a touchscreen user interface and the second docking region may be configured to receive a second user module including a non-touchscreen user interface. At least one of the first and second user modules may be detachable from a docking region. At least one of the docking regions may be a recessed area including a back

panel. A mating connector including electrical contacts may be coupled to the back panel.

In another embodiment of the present invention, a user module for a patient support is provided. The user module includes a housing having a first side and a second side opposite the first side, a first user interface located on the first side, and a second user interface located on the second side.

The first user interface may include a touchscreen and the second user interface may include at least one hardpanel control. The user module may include a coupling region to pivotably couple the housing to a siderail.

In accordance with another embodiment of the present invention, a patient support apparatus is provided. The patient support apparatus includes an adjustable-length arm assembly, a user module including a user interface, the user module being pivotably coupled to a first end of the arm assembly, and a pivot coupler to pivotably couple a second end of the arm assembly to a bed frame.

The second end of the arm assembly may be coupled to a footboard. The arm assembly may include a first arm portion and a second adjustable-length arm portion.

BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description particularly refers to the following figures in which:

FIG. **1** is a perspective view of one embodiment of a siderail of an exemplary patient support in accordance with the present invention, including at least one user module;

FIG. **2** is a perspective view of a portion of the siderail of FIG. **1**, showing a first user module and a portion of a second user module provided therein;

FIG. **3** is an exploded view showing components of the siderail of FIG. **1**;

FIG. **4** is a perspective view of a portion of another embodiment of a siderail in accordance with the present invention, including a movable user module, showing the user module in a first position;

FIG. **5** is a perspective view of a portion of the siderail of FIG. **4**, showing the user module in a second position;

FIG. **6** is another partial perspective view of the siderail of FIG. **4**, showing a bottom portion of the user module;

FIG. **7** is a front perspective view of a portion of the housing of the user module of FIG. **4**;

FIG. **8** is a perspective view of a portion of the interior region of the housing of the user module of FIG. **4** including an illustrative embodiment of a pivot coupler;

FIG. **9** is a top perspective view of a portion of the siderail of FIG. **4** including bumpers;

FIG. **10** is a perspective view of a first side of another embodiment of a siderail in accordance with the present invention, including a movable user module shown in a first position;

FIG. **11** is a perspective view of the siderail of FIG. **10**, showing the user module in a second position;

FIG. **12** is a perspective view of a second side of the siderail of FIG. **10**;

FIG. **13** is a side perspective view of an embodiment of a siderail similar to FIG. **10**, showing a user module spaced apart from the siderail;

FIG. **14**A is a partial perspective view of a docking region of a siderail in accordance with FIGS. **10** and **13**;

FIG. **14**B is a partial perspective view of another embodiment of a docking region in accordance with FIGS. **10** and **13**;

FIG. **14**C is a partial perspective view of another embodiment of a docking region in accordance with FIGS. **10** and **13**;

FIG. **15** is a partial perspective view of a side portion of a user module in accordance with FIGS. **10** and **13**, including a guide portion;

FIG. **16** is a partial perspective view of an exemplary patient support apparatus including a siderail in accordance with FIGS. **10** and **13**;

FIG. **17** is a perspective view of an exemplary patient support apparatus, showing barriers including user modules and docking regions;

FIG. **18** is another perspective view of an embodiment of a patient support apparatus similar to FIG. **17**, showing a removable user module and barriers including docking regions;

FIG. **19** is a partial perspective view of a user module and docking region of a siderail in accordance with FIGS. **17** and **18**;

FIG. **20** is a partial perspective view of another embodiment of a user module and docking region of a siderail in accordance with FIGS. **17** and **18**;

FIG. **21** is a perspective view of another embodiment of a siderail in accordance with FIGS. **17** and **18**, showing the user module in a first position;

FIG. **22** is a perspective view of another embodiment of an exemplary patient support apparatus including a siderail and a user module shown in a first position;

FIG. **23** is a perspective view of a first side of the siderail of FIG. **22**, showing the user module in a second position;

FIG. **24** is another perspective view of the first side of the siderail of FIG. **23** showing the user module in the first position;

FIG. **25** is a perspective view of a second side of the siderail of FIG. **22**, showing the user module in the first position;

FIG. **26** is a partial perspective view of the siderail of FIG. **22** showing a pivot coupler;

FIG. **27**A is a simplified exploded view of the first side of the siderail of FIG. **22**;

FIG. **27**B is a simplified exploded view of a first side of the user module of FIG. **22**;

FIG. **28** is a simplified exploded view showing the second side of the siderail and user module of FIG. **22**;

FIG. **29** is a perspective view of another embodiment of a siderail similar to FIG. **22** including at least one user module;

FIG. **30** is a perspective view of an embodiment of a patient support apparatus including a user module and an arm assembly;

FIG. **31** is a partial perspective view of another embodiment of a patient support apparatus including a user module and an arm assembly; and

FIGS. **32**A-**32**F are partial perspective views of another embodiment of a patient support apparatus including a user module and an arm assembly.

DETAILED DESCRIPTION OF THE DRAWINGS

The present disclosure refers to a number of illustrative embodiments shown in the accompanying drawings and described herein.

FIGS. **1-3** illustrate one embodiment of a siderail including a first user module **36** and a second user module **38**. As shown in FIG. **1**, a patient support apparatus or hospital bed **10** includes a mattress **18** supported by a deck **16**. Deck **16** is coupled to a frame **14**, which is supported by a base **12**.

Support surface or mattress **18** generally includes a cover defining an interior region which includes one or more support members for supporting the weight of a patient, such as foam, air bladders, three-dimensional material and the like. Deck **16** may include one or more articulating deck sections to provide adjustment of a patient's position on the bed, for example, to elevate a patient's head or to move the bed into a chair-like configuration. Frame **14** may include vertical adjustment members to raise and lower the position of the deck **16** or sections thereof with respect to the floor. Base **12** may be supported by casters to facilitate movement or transport of patient support **10**.

The illustrated patient support **10** has a head section **28**, a foot section **30** and a seat section **32**. Barriers **20**, **22** and **24** are positionable around the perimeter or periphery of the patient support **10** to aid in retaining a patient within the boundaries of the mattress **18** or for other reasons. Barriers **20**, **22**, **24** include a footboard **24** and a pair of siderails **20**, **22**. Footboard **24** is positioned adjacent the foot end **30** and each siderail **20**, **22** is positioned generally adjacent the seat section **32** on either side of the mattress **18**. A headboard barrier may also be provided adjacent the head end **28**.

One or both of siderails **20**, **22** may include one or more user modules **36**, **38** facing generally outwardly away from the mattress **18** to enable a user, such as a caregiver or technician, to activate, adjust or deactivate various functions or capabilities of patient support **10**. One or more other similar such modules may be provided facing generally inwardly toward the mattress **18** to enable a patient to activate, adjust or deactivate certain bed functions or capabilities from his or her position on the bed **10**. In general, user modules **36**, **38** include a key lock, password protection, or other similar suitable method for preventing access to the various controls by unauthorized or unintended users. At least user module **36** is located nearer to foot end **30** than to head end **28** of the patient support as shown.

In the illustrated embodiment, siderail **22** includes a top edge **2**, a bottom edge **4**, first and second sides **6**, **8**, and a first or front panel **78**. A first user module **36** and a second user module **38** located adjacent to first user module **36** are provided within the front panel **78**. Siderail **22** may be raised to the illustrated use position, wherein top edge **2** is positioned above the mattress **18**, or lowered to a storage position, via a lift mechanism **21**.

As shown in FIG. **2**, first user module **36** has a dynamic display **40** including one or more of text **42**, graphics **44** and switches or controls or buttons **46**. Dynamic display **40** includes animation or can otherwise change automatically depending on or in response to the particular bed function or capability being activated, adjusted or deactivated. In the illustrated embodiment, dynamic display **40** includes a touchscreen.

Second user module **38** includes one or more of non-dynamic or "hard panel" switches or controls or buttons **48**, text **50**, and graphics **52**.

First user module **38** had a top edge **60**, a bottom edge **66**, and first and second sides **62**, **64**. As shown in FIG. **2**, top portion **60** of first user module **38** is recessed in front panel **78** of siderail **22** by the depth of the indentation or recess **58** (defined by indentations **58***a*, **58***b* as shown in FIG. **3**), while bottom portion **66** is not recessed. As a result, user interface **40** is set at a fixed angle **56** from the vertical axis **54**.

Fixed angle **56** is an acute angle configured so that user interface **40** is generally angled for increased visibility by a person standing next to the patient support **10**. Fixed angle **56** may be in the range of zero to forty-five or even ninety degrees from the vertical axis **54**. However, fixed angle **56** may be influenced or determined by the thickness or amount of interior region space between the siderail housing portions **76**, **78** when siderail **22** is assembled. In the illustrated embodiment, fixed angle **56** is in the range of about 10-15 degrees from the vertical axis **54**.

As shown in FIG. **3**, siderail **22** includes a first or front panel or housing portion **78** and a second or back panel or housing portion **76**. In the illustrated embodiment, each of front and back panels **76**, **78** is a single molded plastic piece. Back panel **76** is formed to include first and second handles **75**, **77**. Back panel **76** also illustratively includes one or more apertures **92** for a patient-side user interface, controls, buttons or switches as described above.

The components of dynamic display **40** are located within the interior region or space defined by panels **76**, **78** when the siderail is assembled. These components include touchscreen **84**, liquid crystal display (LCD) or similar display **88**, control board **90** and gaskets **82**, **86**, which are sandwiched between panels **76**, **78** so that touchscreen **84** is visible through aperture **80**. Control board **90** includes electronics and circuitry for operating dynamic display **40**. Control electronics board **90** is located within the interior region of the siderail, along with the other display components, as shown in FIG. **3**.

Front panel **78** illustratively includes a handle or grip **94** and a bumper or protective strip **96**. Handle **94** is a recess or indented region molded into the panel **78**. Bumper **96** is a molded bar that may extend along the entire bottom edge of the front panel **78**.

Second user module **38** has a first side **72** generally adjacent the first side **64** of the first user module, and a second side **74** spaced therefrom. Nondynamic or hardpanel controls, graphics and text **48**, **50** and **52** are provided within the region between first and second sides **72**, **74** in the illustrated embodiment.

Hard panel display elements **48**, **50**, **52** may be applied to front panel **78** by adhesive or other suitable attachment mechanism. Hard panel elements **48**, **50**, **52** may be provided on a single overlay piece or strip of plastic or other similar suitable material which is then applied to front panel **78**.

Electrical circuitry relating to hardpanel controls or switches **48** is located in the interior region defined by panels **76**, **78**. One or more of first and second user modules **36**, **38** may include an internal battery or similar power supply, and/or may be connected to a computer or control system by a wireless network.

If necessary, wiring connecting each of the first and second user modules **36**, **38** to a power supply and/or mattress controller or patient support control system is generally routed below siderail **22** and under mattress **18** and/or deck **16**. For example, a main control/supply may be located within frame **14** or base **12** and wiring may be routed through one or more channels in the siderail lift mechanism **21**.

FIGS. **4-9** illustrate an embodiment of a siderail **100** including a movable user module **110**. Siderail **100** has a top edge **102**, a bottom edge **104** spaced from the top edge **102**, a first end **106** and a second end **108** spaced from the first end **106**. A first user module **110** and a second user module **112** are included generally within the area bounded by top and bottom edges **102**, **104** and first and second ends **106**, **108**.

First user module **110** has a top edge **128**, a bottom edge **130**, a first side **132** and a second side **134**. A display **114** is provided generally within the area bounded by top and bottom edges **128**, **130**, and first and second sides **132**, **134**.

In the illustrated embodiment, display **114** is a dynamic display. Display **114** may include text **116**, graphics **118** and/or one or more controls or switches or buttons **120** as shown in FIG. **4**. In the illustrated embodiment, controls **120** are touchscreen controls and are located at the bottom end of the display **114** to facilitate single handed use of the module **110** by a user. For example, a user may use a thumb to activate the touchscreen controls while simultaneously holding the module up with the same hand.

Second user module **112** generally includes one or more nondynamic or hardpanel controls or buttons or switches **122**. Second user module may include graphics **124** and/or text **126** as shown in FIG. **4**.

Siderail **100** includes a front panel **98**. A recessed area bounded by indented sides **140**, **141**, **142**, **144** and back wall **138** is sized to receive and house the first user module **110** within the siderail **100** adjacent front panel **98**. The depth of the recessed area **138**, **140**, **142**, **144** may be influenced or determined by the thickness **194** of the siderail **100** and/or the thickness **164** of the first user module **112**.

In a first or storage position, the back portion **162** of first user module **110** rests adjacent back panel **138** in such a way that top edge **128** is set deeper into the recess than bottom edge **130**, resulting in display **114** being angled slightly upwardly for easier viewing by a user standing near the siderail **100**. The resulting angle **196** between first user module **110** and vertical axis **198** of front panel **98** is generally in the range of 0 to 90 degrees from vertical axis **198**. The maximum angle **196** may be determined or influenced by the depth or thickness **194** of the siderail housing. In the illustrated embodiment, when first user module **110** is in the first or storage position, angle **196** is between about 10-20 degrees from the vertical axis **198** (i.e. 70-80 degrees from horizontal).

As shown in FIG. **5**, first user module **110** is movable with respect to front panel **98** of the siderail **100**. A pivot coupling mechanism **136**, **166** is provided adjacent the top edge **128** of the first user module **110**. First user module **110** rotates upwardly away from back panel **138** around an axis extending from pivot coupler **136** along the top portion **128** of the first user module to pivot coupler **166**. In a second or use position, back portion **162** is positioned at an angle **158** with respect to vertical axis **160**. Angle **158** is adjustable by a user, i.e., by lifting bottom portion **130** upwardly away from front panel **98**. Angle **158** is generally in the range of 0 to 90 degrees from the vertical axis **160**. In the illustrated embodiment, the maximum viewing angle **158** is about thirty degrees. In this way, first user module **110** may be stowed within the siderail **100** when not in use, particularly when the siderail or patient support is being transported down crowded hallways or through narrow doorways or passages. In addition, first user module **110** may be rotated upwardly with respect to the siderail **100** to facilitate easier use by a caregiver, technician, or other user.

Bottom edge **130** of first user module **110** intersects curved side edges **156**, which together with back edge **152** define the boundaries of a substantially concave bottom surface **150**. Concavely shaped bottom surface **150** is configured to facilitate gripping or handling by a user to lift and rotate and the first user module **110** upwardly.

Bumpers **146**, **148** are provided on front panel **98** on either side of the recessed area defined by back panel **138** and indented sides **140**, **141**, **142**, **144**. Bumper **146** is positioned generally adjacent first side **132** of user module **110** and bumper **148** is positioned generally adjacent second side **134** of user module **110**. Bumpers **146**, **148** extend generally outwardly away from front panel **98**. Bumpers **146**, **148** may be molded into panel **98** or may be attached thereto by adhesive, screws or other suitable fasteners or fastening mechanism. As shown in FIG. **9**, bumpers **146**, **148** have three surfaces, two sides angled outwardly supporting a front face which extends outwardly away from front panel **98** by a distance that at least exceeds the distance of bottom edge **130** away from front panel **98**. In this way, bumpers **146**, **148** may be configured to protect user module **110** from damage during transport of siderail **100**, for example.

In the illustrated embodiment, pivot coupling mechanism **136**, **166** is provided behind front face **168** of user module **110**. Pivot coupler **166** is an aperture that receives a corresponding pin or similar protrusion extending outwardly from side **144** of the recessed area of the siderail. Pivot coupler **136** is a hollow pivot boss configured to receive a pivot arm **188**, a portion of which is secured in the interior region of the siderail **100** behind side **142**. Electrical wiring, e.g. for power, data, and/or network connections, may be routed through the hollow portion of pivot coupler **136** and through the interior region of the siderail to a destination located within the patient support as needed.

Any suitable pivot coupling mechanism may be used, including a conventional spring pivot mechanism. One embodiment of a suitable pivot coupler is shown in simplified form in FIG. **8**. Arm or protrusion **188** extends into housing **170** and includes arm portion **180** and arm prongs **174**, **176**. Pivot coupler **136** as shown in FIG. **8** includes a first body portion **182**, and a second body portion **178** located in the interior region **172** of the user module **110** and secured therein proximate the back side **170** of the front face **168**. First body portion **182** includes prongs **184**, **186**. Prongs **184**, **186** and second body portion **178** receive arm portion **180** in a manner that allows first body portion **182** and second body portion **178** to rotate around arm portion **180**. A spring may be positioned between body portions **182**, **178** so that upwardly rotation of the housing **170** away from the siderail winds the spring. Second body portion **178** surrounds arm portion **180** and may include a notch or stop (not shown) which may be positioned with respect to prongs **174**, **176** to limit the range of rotation of the housing **170**.

FIGS. **10-13**, **14A-14C**, and **15-16** illustrate embodiments of a siderail **200** including a movable and/or detachable user module **238**. As shown in FIG. **10**, siderail **200** includes first, second and third housing portions **202**, **204**, **206**. First housing portion includes an aperture **208** defining a handle or grip region **212**, and second housing portion **204** similarly includes an aperture **210** defining a handle or grip region **214**. Handle **212** is located proximate a first end **216** of siderail **200** and handle **214** is located proximate a second end **218** of siderail **200**.

First siderail portion **202** has a top portion **220** and a bottom portion **222**, and likewise, second siderail portion **204** includes a top portion **224** and a bottom portion **226**.

A third siderail portion **206** is located between first and second ends **216**, **218**. Third siderail portion **206** has a top portion **228** and a bottom portion **230**, as well as first and second sides **232**, **234**. A mounting or docking region **236** is provided generally between first and second sides **232**, **234** of third siderail portion **206**. Docking region **236** is, in the illustrated embodiment, a recessed area defined by back panel **260** and indented sides **262**, **264** and **266**.

User module **238** has a top edge **240** and a bottom edge **242**, as well as first and second sides **244**, **246**. Housing front face **250** includes an aperture sized to display a user interface area **248**. User interface area **248** includes graphics **252** and controls or switches or buttons **254**, and may also

include text although not shown in the illustrated embodiment. User interface area **248** may include a dynamic display such as a touchscreen, and/or a nondynamic or hardpanel display as described above.

In FIG. **10**, user module **238** is shown in a first or use position wherein a portion of the user module **238** is raised above the top portion **228** of the siderail **200**. Docking region **236** is configured such that when user module **238** is in the use position, user module **238** is tilted so that bottom edge **242** of the user module **238** is positioned at an angle **258** with respect to a vertical axis **256** of the siderail **200** to improve viewability of the user interface **248** by a person standing near the siderail and facing user interface **248**. Angle **258** may be in the range of 0-90 degrees from the vertical axis **256**. In the illustrated embodiment, angle **258** is in the range of about 10-15 degrees from the vertical axis **256**. The tilt angle **258** may be limited or influenced by the depth of the docking region defined by sides **262**, **254**, **266** and/or the thickness of the user module sides **244**, **246**.

User module **238** includes an edge or stop **272** proximate the top portion **240**, which abuts a stop edge **286** of the third portion **206** of the siderail **200** when the user module **239** is in the storage position.

Third portion **206** of siderail **200** includes guide portions **268**, **270** as shown in FIGS. **11-12**. FIGS. **11-12** show user module **238** in a second or storage position. In the second or storage position, user module **238** is not tilted at an angle but is instead more or less flush with the vertical axis **256** of the siderail **200**. Bottom edge **242** of user module **238** is adjacent bottom portion **230** of the third portion **206** of the siderail **200** when user module **238** is in the storage position.

Side **244** has dimensions, i.e., a thickness such that if user module **238** is tilted up when siderail **200** is moved from the up/use position to the down/storage position, side **244** slightly contacts the patient support mattress and is thereby gently urged to slide into its storage position in the recess **236**.

FIG. **12** shows the second or back side of siderail **200** including back panel **284** of the third portion **206**. In the embodiment of FIG. **12**, top portion **240** of user module **238** includes a handle or grasp area **274**, which is defined by indented sides **280**, **282**, top wall **278**, and back wall **276**. In this embodiment, bottom portions of sides **280**, **282** abut stop edge **286** of the siderail portion **206** when the user module **238** is in the storage position.

In the embodiment of FIG. **13**, a ribbon or coupler **292** connects electrical circuitry of user module **238** to electrical circuitry of the patient support. In other embodiments, ribbon **292** is replaced by electrical contacts (similar to the illustration of FIG. **19**, for example), or a wireless network connection may be used.

As shown in FIGS. **13** and **14**A-**14**C, user module **238** is generally slidably coupled to docking region **236**. User module **238** may slide vertically upwardly and downwardly in docking region **236** by virtue of guide bars **288** located on either side **244**, **246** of user module **238** being slidably received by guide tracks **290** located on either side **264**, **266** of docking region **236**.

Guide tracks **290** includes a first portion **294** and a second portion **296** as shown in FIGS. **14**A-**14**C. First portion **294** includes an angle area defined by angle **301** from vertical axis **298**, such that when user module **238** slides upwardly along guide tracks **290**, user module **238** assumes the angle **300** as previously described when the guide bars **288** encounter the angled region **294** of the guide tracks **290**. In the illustrated embodiment, angle **300** is in the range of about 15-20 degrees from the vertical axis **298**, however, in other configurations, angle **300** may be in the range of about 0-90 degrees from the vertical axis.

In the embodiment of FIG. **14**B, a step **302** is provided in angled portion **294** of the guide tracks **290** to aid in securing user module **238** in the tilted position. As such, a portion of guide bars **288** abuts the steps **302** when user module **238** is in the use position. Step **302** is molded into side **264** in the illustrated embodiment.

In the embodiment of FIG. **14**C, a detent **304** is provided in angled portion **294** of the guide tracks **290**. Detent **304** is configured to receive an ear **306** provided on guide bars **288** as shown in FIG. **15**, to aid in stabilizing user module **238** when it is in the use position. Detent **304** is molded into side **264** of the siderail housing **206**, and ear **306** is molded as part of guide bars **288**, in the illustrated embodiment.

FIG. **16** illustrates user module **238** in use in connection with an exemplary patient support **308**. Patient support **308** includes a head end **310**, and a foot end **312**. As shown, a user **314** may access user module **238** from a standing position near the patient support **308** and raise user module **238** to its tilted position with one hand.

The exemplary patient support of FIG. **16** includes a bed frame **316**, a lift or articulating mechanism **318** (which generally connects to a base, not shown), a deck **320**, and a mattress **322** supported by the deck **320**. First and second endboards **324** (i.e., a footboard and headboard), as well as siderails **200**, are also provided around the perimeter or periphery of the mattress **322**. User module **238** is configured to be dockable in a docking region **236** provided on one or more of the siderails **200** and/or endboards **324**.

FIGS. **17-21** illustrate embodiments of a patient support apparatus **400** including a first user module **480**, a second user module **482**, and one or more docking regions **468**, **470**, **472**, **474**, **476**. Patient support apparatus **400** includes a base **406** supported by casters **408**, a frame **410**, a deck **412**, a mattress **414**, and barriers **416**, **418**, **432**, **434**, **448**, **450**. Barriers **416**, **418**, **432**, **434** include a headboard **416**, a footboard **418**, a pair of siderails **432**, **434** located nearer the headboard **416**, and a pair of siderails **448**, **450** located nearer to the footboard **418** than siderails **432**, **434**. In the illustrated embodiment, siderails **448**, **450** are more or less centrally located near a midpoint of the patient support **400** between headboard **416** and footboard **418**.

Headboard **416** includes a handle **426** defined by an aperture **420**, and footboard **418** similarly includes handles **428**, **430** defined by apertures **422**, **424**. Headboard **416** and footboard **418** are coupled to corresponding head and foot ends of the patient support **400**.

First and second siderails **432**, **434** are substantially identical in the illustrated embodiment. Siderails **432**, **434** include handles **442**, **444** defined by apertures **436**, **438** and one or more fillers **440**. Siderails **432**, **434** are each connected to frame **410** by a connector assembly **446**, which is generally operable to move the siderails from a raised position to a lowered position and vice versa. Siderail **432** includes a user module docking region **474** configured to receive a user module **482** and siderail **434** includes a substantially similar docking region **472**.

Third and fourth siderails **448**, **450** include handles **456**, **458** defined by apertures **436**, **438**. Each of siderails **448**, **450** is connected to frame **410** by a connector assembly **464**, which is generally operable to raise and lower the siderails **448**, **450** between an up or user position and a down or storage position. Siderails **448**, **450** also include fillers **460**, **462**.

In general, each of the barriers **416**, **418**, **432**, **434**, **448**, **450** may be removably coupled to the patient support **400**.

One or more of the docking regions **468**, **470**, **472**, **474**, **476** may be located on a first or outer side of a barrier facing outwardly away from the mattress and toward a user positioned near the patient support **400**, or may be located on a second or inner side of the barrier facing inwardly toward the mattress and toward a user positioned on the mattress. The illustrated embodiment shows a combination of inwardly facing and outwardly facing docking regions. Each docking region may be configured to receive either of the user modules **480**, **482**, or certain docking regions may be configured to receive one of the user modules and not the other. One or more of the docking regions may include a grip recess **484** to facilitate lifting or removing a user module positioned in the docking region.

Docking regions **470**, **472**, **474**, **476** are generally located within siderails **432**, **434**, **448**, **450** while docking region **468** is provided in or mounted to footboard **418**. In the illustrated embodiment, barriers **416**, **418**, **432**, **434**, **448**, **450** are generally made of molded plastic and docking regions **468**, **470**, **472**, **474**, **476** are molded portions of the barriers. Other suitable manufacturing and/or assembly techniques may also be used.

One or more of the docking regions may include a user module coupler **478** to permanently or removably couple a user module to the docking region. In the illustrated embodiment, user modules **480**, **482** are generally removably couplable to a docking region **472**, **474** by a coupling mechanism such as described herein. However, one or more user modules **480**, **482** may be fixed in a docking region and may be upwardly pivotable as described herein.

Each of user modules **480**, **482** may include dynamic, i.e. touchscreen, controls or switches or buttons, nondynamic or hardpanel controls or switches or buttons, graphics and/or text, or a combination thereof. In addition, only one form of user module **480** or **482** may be provided, or the features of user modules **480**, **482** may be provided on a single module.

FIG. **18** shows an embodiment of a docking region having a recessed portion **488** and a conduit or channel portion **486** configured to route wiring from a user module mountable in the docking region to a controller, power supply or other similar area of the patient support as may be needed. Such connections may also be accomplished by a wireless network.

As shown in FIG. **18**, first user module **480** includes a dynamic display **490** including graphics **492** and controls or switches or buttons **494**. In the illustrated embodiment, buttons **494** are touchscreen controls. Second user module **482** includes nondynamic or hardpanel graphics **496** and hardpanel controls or switches or buttons **498**.

FIG. **19** shows an embodiment of an electrical mating connector for the "snap in" style user modules described above to connect the electrical circuitry of the user module to that of the patient support. As shown in FIG. **19**, the siderail **501** has a top portion **500**, a recessed docking region **488** in the siderail similarly to docking regions described elsewhere herein, and a pivot connector **478**. A detachable user module **503** is sized to be mounted in or received by the docking region **488** of the siderail. The user module **503** has a top portion **504**, which includes a recessed connector area **506**, which is shaped to receive the pivot connector **478**. In the illustrative embodiment, pivot connector **478** has a concavely shaped face and connector area **506** has a corresponding convexly shaped recess as shown. In addition, pivot connector **478** includes protrusions or ears or spring plungers **502** located on one or both sides of the concave face **478** and configured to mate with corresponding apertures **508** located on either or both sides **510**, **512** of the recessed connector area **506** to pivotably couple the user module **503** to the docking region **488**. Springs may be coupled to protrusions **502** to facilitate a snap-in/snap-out mounting for the user module **503**.

Docking region **488** includes a mating connector region **518** located on the back panel of the recessed area **488** of the siderail **501**. Mating connector region **518** includes one or more electrical contacts **514**, **516**, and **520** for data, power and/or network connections. In the illustrated embodiment, contacts **514**, **516** and **520** are leaf contacts. Connector region **518** also includes a locator area **538** configured to mate with the corresponding locator area **526** of user module **503**. Locator area **538** includes locating protrusions or pins **522**, **524**, which are configured to be received by locating pin holes **534**, **536** of user module **503** to align electrical contacts **514**, **516**, **520** of docking region **488** with contacts **528**, **530**, **532** of user module **503**.

User module **503** includes an electrical mating connector **526** located on the rear face of the user module housing **503** and configured to mate with mating connector region **538**. Mating connector **526** includes one or more electrical contacts **528**, **530**, **532** for data, power and/or network connections. In the illustrated embodiment, contacts **528**, **530**, **532** are surface contacts. Locating pin holes **534**, **536** are sized to receive pins **522**, **524** as mentioned above. Adjacent to the holes **534**, **536** are locator regions **540**. Locator regions **540** are recessed, or are made with a different texture than the surface of area **526**, or are otherwise configured to facilitate mating of holes **536**, **540** with pins **522**, **524**. In another embodiment, pins **522**, **524** are located on user module **503** and the corresponding holes **534**, **536** are located in the docking region **488**; in other words, the locations of connector region **538** and connector **526** are switched. Electrical connectors **518**, **528** enable user module **503** to use a rechargeable power source that can be recharged when module **503** is mounted to a docking region.

In the embodiment of FIG. **20**, a siderail **550** includes a top portion **552** and a bottom portion **554**. Connector **558** is a pivot connector including apertures **588** on either side of concavely shaped face **560** of the pivot connector. Apertures **588** are shaped to receive pivot connector protrusions **586** to pivotably couple a user module **571** to the docking region **556** of the siderail **550**. Protrusions **586** may be spring loaded as described above.

In the embodiment of FIG. **20**, the electrical contacts are provided as part of the pivot connection as shown. Conductive contacts **564**, **566**, **568** are concavely shaped following the shape of the surface **560** of the pivot connector **558**.

User module **571** has a top portion **570** and a bottom portion **572**. Coupling region **574** is, in the illustrated embodiment, located nearer the top portion **570** than the bottom portion **572**. Conductive contacts **580**, **582**, **584** are provided in the recessed area **576** and are convexly shaped corresponding to the shape of the recessed area **576** of the user module **571**. In this way, user module **571** is configured to detachably fit within docking region **556** of the siderail **550** as shown by arrow **590**.

FIG. **21** illustrates an embodiment similar to FIG. **20** including a detachable user module **610**, wherein user module **610** is pivotable upward away from the rear wall of the docking region as shown by arrow **616**. As shown in FIG. **21**, the front housing **612**, **614** of the user module **610** includes indented sides **624**, **626**, **628**, **630** and touchscreen **624** therefore recessed with respect to front housing **612**, **614**. User module **610** is pivotable and detachable with respect to a docking region located between first and second ends **606**, **608** of siderail **600** and between top and bottom

portions **602**, **604** of siderail **600**. A recessed gripping region **618** is provided to facilitate flip up or detachment of user module **610** from the siderail **600**.

FIGS. **22-26**, **27**A-B, and **28-29** illustrate embodiments of a patient support **650** including one or more docking regions **678**, **680**, **682**, **684** similar to those described above and one or more user modules **674**, **676**. Patient support **650** includes a base **652** movably supported by casters **654**, a frame **656**, a deck **658**, a mattress **660** supported by the deck **568**, and one or more barriers such as a headboard **662**, a footboard **664**, and siderails **666**, **668**, **670** and **672**. Siderails **666**, **668**, **670**, **672** are connected to patient support **650** by connector assemblies **686**, **688** in a similar fashion as described above. In the illustrated embodiment, one or more of siderails **670**, **672** include a snap-in user module **676** as described above. Siderail **666** includes a pivotable "flip-over" user module **674** and one or more of the other siderails or endboards of the patient support may also be configured to mount such a user module thereto as well.

Siderail **666** includes a top portion **689**, a bottom portion **690** and first and second ends **692**, **694**. A handle **700** defined by aperture **696** is located proximate the first end **692** and likewise, a handle **702** defined by aperture **698** is located proximate the second end **694**. Fillers **704**, **706** are provided in apertures **696**, **698**.

Coupling regions **708**, **710** of siderail **650** are provided on either side of docking region **678** for pivotably coupling the user module **674** to the siderail **650**. Recessed area **712** is provided under the docking region **678** to facilitate lifting and rotation of the user module **674** with respect to the siderail **650**.

User module **674** includes a top portion **714**, a bottom portion **716**, first and second sides **718**, **720** and a front side **722**. A first user interface **724** is located on the front side **722** of the user module **674**. First user interface **724** includes graphics, text and/or controls, buttons or switches as described herein. In the illustrated embodiment, first user interface **724** includes hardpanel controls and graphics.

User module **674** has a second side **730** which is revealed when user module **674** is rotated upwardly in the direction of arrow **734**, as shown in FIG. **24**. Second side **730** includes a second user interface **732**. Second user interface **730** includes graphics, text and/or controls, buttons or switches as described herein. In the illustrated embodiment, second user interface **730** includes touchscreen controls and graphics.

Docking region **678** is a recessed area in siderail **666** defined by indented sides **738**, **740**, **742** and is sized to receive the user module **674** in the recessed area.

FIG. **24** shows a first side **736** of siderail **688** while FIG. **25** shows a second or opposite side **744** of siderail **688** with the user module **647** rotated upwardly in the direction of arrow **746**. In the illustrated embodiment, first side **736** is configured to face outwardly away from the mattress to be viewable by a user positioned next to the patient support. Controls located on front side **722** are disabled or otherwise secured so that they are imperable to a patient positioned on the mattress when the user module is rotated upwardly to the position shown by FIGS. **24-25**.

FIG. **26** shows in greater detail the coupling region **726** of the user module **674**. While any suitable conventional pivot coupling mechanism may be used, in the illustrated embodiment coupling region **726** extends outwardly away from the second side **730** of the user module. Siderail **688** includes a corresponding coupling region **708** to which coupling region **726** is pivotably coupled. Coupling region **708** extends from side **740** and in back of back panel **678** as shown. Coupling region **726** includes an aperture **748** and likewise coupling region **708** includes an aperture **750**. Pivot coupler **749** is inserted into apertures **748**, **750**. Such pivot coupling is provided on either side of the user module as indicated by FIGS. **27**A and **28**. Pivoting coupler assembly **748**, **749**, **750** may include a friction hinge on at least one side of the user module **730** to reduce the speed of rotation and therefore the risk of danger to the user module when rotated downwardly to the recess **678**.

A simplified exploded view of the assembly of user module **674** is shown in FIG. **27**B, from the perspective of a person viewing the second side **730** when user model **674** is in the upwardly rotated position of FIG. **24**. User module **674** includes a first or front housing portion **752** and a second or back housing position **754**. Sandwiched front housing **752** are dynamic display components including touchscreen **760**, liquid crystal display (LCD) or similar suitable display **762**, gaskets **764** and control board **766**. Front housing **752** includes aperture **756** thought which touchscreen **760** is visible to a user. In this manner, all of the required user interface components are housed with the user module **674**.

FIG. **29** illustrates another embodiment of a siderail **780** similar to the previously described embodiment, wherein a first user module **782** is pivotably coupled to siderail **780** by a pivot coupler **784**. First user module **782** includes a first user interface **786** and one or more buttons or controls or switches **788**. In the illustrated embodiment, first user interface **786** is a touchscreen and includes text, graphics and/or touchscreen controls or switches or buttons as described above. In FIG. **29**, the recessed docking region of siderail **780** includes a second user module **790**. Second user module **790** includes a second user interface **792** built into the siderail **780**. Second user interface includes one or more user controls or switches or buttons but may text, touchscreen and/or graphics as well. In embodiments including user modules pivotably coupled to a siderail or other barrier, electrical components of the user module may be connected to a power supply and/or main controller of a patient support by routing the connecting wiring through the pivot coupling regions of the user module and docking regions and down through the interior region of the siderail to a destination within the dimensions of the bed frame or base of the patient support.

FIGS. **30-31** and **32**A-**32**F illustrate embodiments of a user module for a patient support and an arm assembly. FIG. **30** shows a user module **800** coupled to a patient support **804** by an arm assembly **802** and a patient **806** positioned on the patient support **804**.

User module **800** includes a housing **810**, a display **812**, and one or more user areas **814** which include graphics, text, and/or controls, buttons or switches as described above. In the illustrated embodiment, display **812** is a touchscreen and includes touchscreen controls, switches or buttons. A pull up bar or handle **816** is also provided with user module **800**, which can be used to facilitate repositioning of a patient **806**. In the illustrated embodiment, bar **816** is provided below display **812**, such that there is an aperture or open area between display **812** and bar **816** as shown.

User module **800** is pivotably coupled to arm assembly **802** by a pivot coupler **818** such that user module **800** is up to 360 degrees rotatable with respect to the arm assembly **802** as shown by arrow **820**. Pivot coupler **818** is coupled to a first arm portion **822**.

First arm portion **822**, first extender **826** and the substantially horizontal section of u-shaped arm portion **828** of arm assembly **802** are generally configured to extend over the top

portion of the patient support **804** and above the patient **806**. Extender **826** is slidably coupled to u-shaped arm portion **828** to extend or retract the length of the overhead portion of the arm assembly **802** as shown by arrows **824**. A substantially vertical section of u-shaped portion **828** is coupled to an extender **832**. Extender **832** is slidably coupled to arm portion **834** to extend or retract the length of the substantially vertical portion of arm assembly **802** as shown by arrows **830**. Ann portion **834** is pivotably coupled to bracket **840** by a pivot coupler **838**. Pivot coupler **838** is illustratively a tension screw that may be tightened when rotated clockwise and loosened when rotated counterclockwise; such that movement of arm **834** is restricted when coupler **838** is tightened and movement of arm **834** in the directions of arrow **836** is permitted when coupler **838** is loosened. Bracket **840** is coupled to and supported by deck **808** of the patient support. FIG. **30** shows arm assembly **802** coupled to the head section of the patient support **804**. In other embodiments, arm assembly **802** may be coupled to either side or to the foot end of the deck **808**.

Another embodiment of a user module **850** is shown in FIG. **31**. User module **850** includes a user interface **862**, which may include text, graphics, and/or controls as described above. A pivot coupler **858** couples user module **850** to a bendable, movable arm **852**. Arm **852** is pivotably coupled to foot end **856** of patient support **854**. User module **850** is rotatable with respect to arm **852** up to 360 degrees as shown by arrows **860**. Arm **852** is of a conventional gooseneck style or similar flexible structure. In this way, user module **850** may be repositioned to be accessible to a user located near the foot end **856** of the patient support **854**, or to a user located on either side of the patient support **854**, without detaching the user module **850** from the patient support.

FIGS. **32**A-**32**F illustrate another embodiment of a user module **900** for a patient support **904**. User module **900** is coupled to an endboard **902** of the patient support **904** by an arm assembly **906**. In the illustrated embodiment, endboard **902** is a footboard coupled to the foot section of the patient support **904**.

User module **900** includes a top portion **922**, a bottom portion **924**, a first side **926**, a second side **928**, a front side including user interface **930** and a rear side **960**. Generally within the boundaries of top and bottom portions **922**, **924** and first and second sides **926**, **928**, a user interface **930** is provided. In the illustrated embodiment, user interface **930** is a touchscreen but it may include any of the features of user modules described elsewhere herein.

Footboard **902** has a top portion **910**, a bottom portion **912**, a first side **914** and a second side **916**. A recessed area **936** is sized to receive user module **900** substantially within the dimensions of the footboard **902** when the user module **900** is in a first position shown in FIG. **32**A. Such recessed area includes a back wall **936** and indented sides **938**, **940**, **942**. A recessed grip or lift area **918** is proximate the recessed area to facilitate lifting or gripping of user module **900**. A coupling region **944** is provided near the top edge **910** of the footboard **902**.

User module **900** is coupled to footboard **902** by an arm assembly **906**. Arm assembly **906** includes a first arm portion **946** and a second arm portion **948**.

User module **900** is pivotably coupled to first arm portion **946** by a pivot coupler **920** coupled to the rear side **960** so that user module **900** is upwardly tiltable to an angle **934** from a vertical axis **932** of the footboard **902** as shown in FIG. **32**B. Pivot coupler **920** rotates around a pin **964** inserted through a coupling region **962** of arm portion **946**.

Second arm portion **948** is slidably coupled to coupling region **944** of the endboard **902**. Coupling region **944** includes a channel **950** which is configured to slidably receive arm portion **948** such that arm portion **948** is upwardly and downwardly movable as shown by arrows **952**. Coupling region **944** is also configured to allow rotation of arm portion **948** as shown by arrow **954** of FIG. **32**D. In this way, user interface **930** may be vertically adjusted and rotated to be viewable by a person located near the endboard **902** or on either side **956**, **958** of the patient support **904** as shown by FIGS. **32**D and **32**E.

In general, structural housing components of siderails and user modules disclosed herein are made of molded plastic, stainless steel or other similar suitable material, and conventional techniques for hinging, coupling, pivoting or sliding mechanisms, and molding, may be used in any of the illustrated embodiments.

Viewing angles of user modules described herein are generally operable without regard to the positioning of the siderail, i.e., whether the siderail is in a raised or lowered position. Features of siderails described herein are generally applicable to corresponding siderails located on opposite sides of a patient support, or to other siderails or barriers that may be used in connection with a patient support.

Features of the various user modules described herein, for example, touchscreens, graphics, text, hardpanel controls, and the like, are generally interchangeable such that a user module described as having touchscreen controls may alternatively or in addition include hardpanel controls, and vice versa.

The present invention has been described in detail with reference to certain illustrative embodiments. However, the foregoing description is not intended to limit the scope of protection of the present invention to the precise terms and embodiments set forth herein.

What is claimed is:

1. A patient support apparatus comprising:

a siderail having a main body including a recess; and

a user module coupled to the main body for pivotable movement between a first position in which the user module is situated within the recess and a second position in which a majority of the user module is situated outside of the recess, the user module having first user inputs provided thereon and the siderail having second user inputs provided on the main body within the recess, wherein the first and second user inputs are both inaccessible when the user module is in the first position and wherein the first and second user inputs are both accessible for use when the user module is in the second position.

2. The patient support apparatus of claim **1**, wherein the first user inputs include a first set of buttons.

3. The patient support apparatus of claim **2**, wherein the first user inputs further include a touchscreen.

4. The patient support apparatus of claim **3**, wherein the first set of buttons comprises a first button and a second button, and wherein the touchscreen is situated between the first button and the second button.

5. The patient support apparatus of claim **3**, wherein the first set of buttons comprises a first pair of buttons and a second pair of buttons, and wherein the touchscreen is situated between the first pair of buttons and the second pair of buttons.

6. The patient support apparatus of claim **2**, wherein the second user inputs comprise a second set of buttons.

7. The patient support apparatus of claim 1, wherein the user module pivots upwardly relative to the siderail when moving from the first position to the second position.

8. The patient support apparatus of claim 7, wherein the user module extends upwardly from the recess beyond a top edge of the siderail when the user module is in the second position.

9. The patient support apparatus of claim 1, further comprising at least one pivot coupler that pivotably couples the user module to the main body of the siderail.

10. The patient support apparatus of claim 9, further comprising wiring that is routed from the first user inputs through the at least one pivot coupler and into an interior region of the main body of the siderail.

11. The patient support apparatus of claim 9, wherein the at least one pivot coupler is located within the recess.

12. The patient support apparatus of claim 1, wherein the user module is configured to substantially fill the recess when in the first position.

13. The patient support apparatus of claim 1, wherein the first user inputs face towards the second user inputs when the user module is in the first position.

14. The patient support apparatus of claim 13, wherein the first user inputs face in generally a same direction as the second user inputs when the user module is in the second position.

15. The patient support apparatus of claim 13, wherein the first user inputs are situated above the second user inputs when the user module is in the second position.

16. The patient support apparatus of claim 1, further comprising a frame and wherein the siderail is coupled to the frame for movement between a raised position and a lowered position.

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